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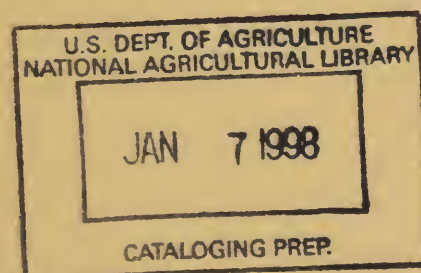
ARS 52-46
December 1969

Research in Ag.

**SELECTED RESEARCH ABSTRACTS OF PUBLISHED AND
UNPUBLISHED REPORTS PERTAINING TO THE
FOOD SERVICE INDUSTRY**

Including Recommendations For Research Needs

**Agricultural Research Service
UNITED STATES DEPARTMENT OF AGRICULTURE**



FOREWORD

The Transportation and Facilities Research Division of the Agricultural Research Service conducts research to find ways to hold down the costs of physical distribution of products from farms to consumers. It seeks to determine and to bring about the adoption of the most efficient facilities, equipment, and methods for moving these products through distributive channels.

Since about one-fourth of the consumer's food dollar is expended for food eaten away from home, the Division is interested in finding ways to hold down the costs of distributing this food through the food service industry.

The National Restaurant Association has a similar and much broader interest. This project was initiated and cooperatively funded by the U.S. Department of Agriculture and the National Restaurant Association to determine the research information currently available to the industry and the additional knowledge needed. The work, which is broader than the function of this Division, was done under a contract with the Food Research Center for Catholic Institutions of New York City, which also gave financial support to the project.

This publication contains the contractor's report exactly as it was written, except for the summary which was prepared by the Division. Consequently, the Division is not responsible for the wording or content of the rest of the publication. It is hoped that this information will be of value to those inaugurating future research for the industry.

William C. Crow
Director
Transportation and Facilities
Research Division
Agricultural Research Service
U. S. Department of Agriculture

ACKNOWLEDGMENTS

The material presented in this report was developed under contract by the Food Research Center for Catholic Institutions, by Richard J. Cassidy and Leo Nejelski, under the general direction of Brother Herman Zaccarelli. This study was jointly sponsored by the National Restaurant Association and the U.S. Department of Agriculture. Special recognition is given to Vernon E. Cordell and the Research Committee of the National Restaurant Association who assisted the Department in planning and reviewing the findings of this report.

The following individuals and organizations cooperated actively in this study: Jake Fassett and Mel Sandler, American Hotel and Motel Association; George Bedell and Vernon Cordell, National Restaurant Association; Harriet Sankey, American Dietetic Association; Mrs. Bonnie Miller, American Hospital Association; Mrs. Ruth K. Tracy, Society For The Advancement of Food Service Research; Reuben R. Cordova, Institutional Food-Service Manufacturers Association; John H. Moriarty, Arthur D. Little, Inc.; Richard Gale and Ken F. Muldoon, American Gas Association; J. Dudley Waldner, Edison Electric Institute; Robert D. Parks, Howard Johnson's; David Berge; Nathan's Famous, Inc.; Michael Agran, President Restaurant; Marshal Warfel, Sheraton Hotels; Mary R. DeMarco, Cleveland Metropolitan General Hospital; Patricia Albright, Campbell Soup Company; M. N. Wiltshire, Kraft Foods; Leo Beckwith and Orm Manhard, Market Forge Company; Edmund Miller and Frank Weber, Harris, Kerr, Forster Company; John D. Lesure, Laventhol, Krekstein, Horwath & Horwath; Johnson Poor, Club Management; Harold W. Herman, College and University Business; Robert Edgell, Drive-In Management; Don Karas, Fast Food Magazine; Fergus McKeever, Institutions Magazine; Robert M. Cunningham, Jr., The Modern Hospital; Jack Ghene, Volume Feeding Management; John C. Hofer, Reconnaissance, Inc.; Hilda Watson Gifford, Center For Technological Education; Vance A. Christian, H. A. MacLennon, Helen Recknagel, Katherine R. Spinney, and J. J. Wanderstock, Cornell University; Henry Ogden Barbour, Frank D. Borsenik, George R. Conrade, Edward Kazarian, Lendal H. Kotschevar, L. J. Minor, William Stafford and Leonard E. Zehnder, Michigan State University; John Casbergue, Ohio State University; Dr. Marie E. Knickrehm, University of Nebraska; S. Earl Thompson, University of Pennsylvania.

The study was conducted under the general direction of R. W. Hoecker, Assistant Director, Transportation and Facilities Research Division, Agricultural Research Service. Immediate responsibility for this research was vested with John F. Freshwater, Transportation Research Branch, Transportation and Facilities Research Division.

Trade names are used in this publication solely for the purpose of providing specific information. Mention of a trade name does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture or an endorsement by the Department over other products not mentioned.

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SELECTED RESEARCH ABSTRACTS OF PUBLISHED AND UNPUBLISHED REPORTS PERTAINING TO THE FOOD SERVICE INDUSTRY - Including Recommendations for Research Needs

By Leo Nejelski for Market Research and Development Division, Food Research
Center for Catholic Institutions, New York, N.Y.

SUMMARY^{1/}

The research abstracts presented in this publication will provide students, teachers, and food service personnel with a synopsis of current research findings. The economic impact of the research recommended by the contractor could not be realistically evaluated. However, these recommendations should provide researchers with guidelines in the design of future research projects as they represent the best judgments of knowledgeable persons associated with the industry and a qualified contractor.

The rapid increase in labor costs and shortages of personnel have required operators to give top priority to increasing labor and facility efficiency. The literature review shows that, except for two studies by the U.S. Department of Agriculture and four by the U.S. Navy of a specialized nature, no comprehensive studies are available that can be used generally to help increase the industry's efficiency. The literature available is primarily magazine articles based upon casual observation and experience gained through working with the industry.

The increase in demand for "food away from home" is resulting in an increase in the number of food service operations. This growth trend, along with increases in wage rates, food, and other operating costs, is pressuring management into developing a systems concept to obtain effective control of operating expenses which will provide satisfactory returns on capital investment.

In reality, the degree of success, or status, of a particular type of food service operation cannot be measured only in terms of sales volume, profit and loss figures, and the rate of return on capital investment. Such intangible factors as employee morale, menu acceptance, and the psychological impact of the dining atmosphere upon the consumer have a dynamic impact on such consumer decisions as "where to eat, or should I bother to eat out?" An increasing number of operators, mainly the larger ones, recognize these intangible factors and are attempting to evaluate their impact upon financial progress. There is also a growing realization that survival in an expanding competitive market is dependent upon the determination of profit margins and production costs for specific menu items. Management is being forced to discontinue the practice of increasing menu prices of popular items to offset suspected cost increases of less popular items because an ever increasing number of specialty houses offer low-priced, limited menus.

^{1/} Prepared by John F. Freshwater, Transportation and Facilities Research Division, Agricultural Research Service, U.S. Department of Agriculture.

Management will be able to meet these challenges when it has available, through research and analysis, a system to evaluate the foregoing tangible and intangible factors. This can be speeded up for the benefit of the entire food service industry if Government, universities, associations, operators, and research and development specialists determine common objectives and agree (at least tacitly) on methods of accomplishing them. To expedite this effort, some of the more important areas in which research should be conducted are listed. The sequence of the following listing is in the same order as the chapters in which these recommendations are presented in greater detail and not necessarily in order of priority.

1. Conduct research to determine the relative importance of such factors as population growth and concentration, economic growth, disposable income, family origin, travel, and location and size on the success or failure of food service operations. Quantitative values should be determined for these variable factors. Develop mathematical models for electronic data processing, or simplified models for manual calculation, or both.

2. Design and conduct research to reevaluate and revise the statistical data available to the industry for adequacy and timeliness. Standardize the categories or types of operations that are causing increasing confusion in comparing statistics and calculations. A vast multiplicity of categories has resulted from the individualization of food service operations to achieve merchandising distinctiveness. Often, the statistical data presented in trade journals, university publications, and trade association magazines or papers cannot be correlated to data published by the Census Bureau. It is recommended that the data published every 5 years by the Census Bureau be used as a statistical base. The Census Bureau categories should be reclassified. Trade journals, university publications, and trade associations should update the base figures within the 5-year interim.

3. The relative importance of various factors that have a significant impact upon merchandising, such as menu pricing, menu variety, physical environment, gratification of psychological needs, and advertising should be quantitatively evaluated. Approximate evaluations of the relative importance of these factors could be determined in a preliminary or pilot research study by (1) determining what the consumer requirements are for specific types of food service operations and (2) evaluating the merchandising practices in successful food service operations by type to determine the degree of correlation to consumer requirements.

4. A survey of food manufacturers and processors should be conducted to determine optimum order sizes for "convenience foods" produced exclusively for the food service industry. These products would be manufactured or processed by the food manufacturer to the food service operator's specifications.

5. Design and conduct operations analysis research of successful food service operations by type to (1) quantitatively evaluate specific production elements and establish the criteria for basic production costs, (2) determine which production elements of various food service systems are similar and which are not, and (3) determine the overall efficiency of various food service production systems. Conduct research to improve deficient production operations which are common to most food service operations. Develop a mathematical model

for computer application to evaluate food service systems. Upon refinement, this model could be utilized for various simulation applications such as the evaluation of proposed changes in work methods and the impact of automated equipment upon various food service systems.

6. Conduct research to determine the minimum and maximum number of food service outlets by type of operation and the sales volume required to justify capital investment for a commissary operation versus purchasing "made-to-order" convenience foods from a food manufacturer.

7. Conduct research to determine the specific cost controls required of an information system to evaluate various types of food service systems. The practicality of such factors as volume variance (the projected sales volume by menu item compared with actual sales volume), material variance (food required for production compared with actual usage), performance variance (cost of labor and equipment required for menu production compared with actual usage), advertising variance, and other significant cost factors should be determined.

8. In-depth research studies of successful food service operations should be made with the collaboration of social scientists to determine what output is needed of a good manager, supervisor, waitress, or cook, and what input is required (I.Q. levels, personal characteristics, etc.). The input will serve as guidelines for recruiting personnel. Analyze the characteristics of people available in the labor market and design training programs which supply the required skills. Develop the feedback or monitoring subsystem necessary to evaluate the training program. Once such systems are developed, the National Restaurant Association, American Hotel and Motel Association, State and local associations, and colleges can provide invaluable services to food service operators, most of whom do not have the time or the resources or both to conduct and evaluate effective training programs.

INTRODUCTION

Both the profit and nonprofit segments of the food service industry^{2/} have been and are being adversely affected by increased costs for labor and supervision. A shortage of skilled and qualified personnel in the labor market indicates that this condition will not change in the immediate future. This problem has been and is further compounded by a growing market for "food away from home," a result of increases in buying power and population and changes in the economy.

The food service industry is accepting the challenge of an escalating market by increases in the number of units such as restaurants, cafeterias, hotels and motels offering food service; hospitals and nursing homes; schools,

^{2/} The term "food service industry" as used in this report is defined as the production of finished food items for consumption by the general public away from home. The nonprofit segment of the industry is comprised of such operations as schools, correctional institutions, and hospitals.

colleges, and universities; and in-plant and in-office food services. As a result of labor shortages, increased cost, and a growing industry, management is confronted with the necessity of adopting the principles and methods of industrial planning, administration, and evaluation. Just how these principles can best be applied to food service management in both the profitmaking and nonprofit sectors still remains in the experimental and formative stages. The smaller operators continue to manage impressionistically, with only a few deliberately striving to improve earnings, grow, or multiply their operations.

Research Objective and Methodology

The objective of this study was to assemble reports of food service research, to evaluate and summarize them, and then to determine within the framework of trends what the research gaps or needs of the industry are currently and the indications of future trends. Most of the reports reviewed apply to several segments of the food service industry. The research needs and gaps were determined through interviews with executives, educators, and editors who had both extensive and intensive knowledge of trends and needs of the food service industry and a review of the existing research.

At the outset, extensive interviews were conducted with operators, managers, editors, and association executives to determine the trends, problem areas, and the availability of research reports. These initial interviews and the research reports then available were reviewed and the following problem areas defined: Industry statistics and feasibility studies, merchandising, purchasing, facilities design and operations analysis, commissary operations, finance and cost control, and personnel management. Intensive personal follow-up interviews were conducted relative to these problem areas. Concurrently, an inquiry was mailed to various organizations within the industry requesting research reports or information regarding them. Additional details concerning the objective and methodology are presented in appendix, exhibit C.

The food service industry is specialized or unique in that it encompasses both food and people services. In addition to receiving a raw product, processing it, and serving it to a consumer (food service), the industry must also provide such "people services" as restrooms, comfortable waiting lounges, a pleasant dining atmosphere, fast or leisurely service, and an acceptable degree of privacy. Very little basic research has been conducted concerning the motivations, needs, and gratifications of consumers. The lack of knowledge in this area has forced the experimental and impressionistic methods of marketing management to prevail.

Over the years the food service industry was looked upon as a part of the consumer food industry in general. While food was and is common to both, the food service industry actually competes with food manufacturing. In addition, the food service operator must provide unique services to satisfy consumer needs that cannot be handled at home. Failure to recognize and understand this uniqueness has left vacuums in all phases of social and economic research, in food service management, planning and operations and, most importantly, in the satisfaction of human needs. One dramatic example exposed is that only in 1966 was basic research initiated to define the structure of the food service market, measure its importance, and examine its requirements.

The results of research conducted in nonprofit food service operations and in colleges and universities were most readily available. However, in other segments of the industry there was considerable reluctance to "share valuable findings and developments with competitors." Most recently, as expressed by some of the executives interviewed, under the stimulation of editorials and research reports published in journals and food service magazines, the value of shared information and research is becoming more broadly recognized.

INDUSTRY STATISTICS AND FEASIBILITY STUDIES

With land and other costs increasing, transportation changing, obsolescence growing, and population increasing, there is a more vital need than ever to provide food service owners, financial institutions, equipment manufacturers, food processors and manufacturers, and research organizations with timely and meaningful statistical data concerning the "away from home" food market. These statistics provide management with the basic criteria to evaluate the market potential for equipment, material and services related to the food service industry; to determine the economic feasibility of expanding existing food service operations or building new facilities; and to design and evaluate the effectiveness of research.

The commitment of capital investment funds by the profitmaking segment of the food service industry has become more critical and requires accurate and discriminating management decisions, a result of increased costs for construction, land, and equipment. There is a general lack of understanding regarding the values and factors that must be considered in a feasibility study which evaluates the site location, the size of the operation, the type of food service operation, and the potential sales volume. There is widespread agreement that judgment is an important factor. However, just what enters into such judgment has never been defined specifically or in detail, but has been based largely on intuitions, hunches, and individual experiences. For example, some operators have moved away from heavy traffic areas and have developed profitable businesses through enticing menus, promotion, hospitable service, special events, ample parking space, and so forth.

Some students of the food service industry estimate that there may be as many as 150 to 200 variable factors relating to feasibility studies. Which ones are most relevant regionally for various types of operations should be determined and values placed on them. Such calculations will not only aid judgments in the selection of new sites, the size and type of operation, but also in planning for presently occupied sites both in keeping abreast of changes, and in building up to full potentials and profits.

As in all industries, food service management is caught up in mounting waves of rapid change. From all indications, this trend will continue. To adjust to change, objectives must be formulated and methods programmed for accomplishing them. Greater importance must be placed on planning, designing, building, and operating into the years ahead rather than merely meeting today's needs. This is indicated by estimates that restaurants need to be modified every 2 to 5 years. It is admitted that much of this has been forced on the

industry by unanticipated developments. Much of such action appears to have been defensive rather than creative and forward-looking.

In analyzing and evaluating research studies and reports, it became evident that little attention had been given to the factors that enter into the economy or scale of efficient business size in various categories of food service operations. Most evaluations of efficient size have been presented in terms of averages. More helpful information appears to be contained in individual income statements and in-case histories of specific operations.

In determining efficient size, the basic question is: What type and quantity of food service is needed? Although research has been lacking in determining the efficiency of nonprofit operations, much practical and experimental experience has been developed. A nursing home with 50 beds, for example, can do most feeding with preprepared and convenience foods. At the other extreme, when size becomes great, as in some large universities, hospitals, manufacturing plants, and school systems, costs of preparation, supervision, handling, service, and other elements rise out of proportion and have to be centralized into commissary systems for economical operation.

The profitmaking section of the food service industry is even more complicated. Some guideposts to efficient size do exist but vary by location, area, finances, management skills, marketing know-how, labor market, incomes, needs and ages of present and potential customers, and other considerations. Regardless of size, what appears most important is how effectively owners can plan and manage, and not merely operate.

Research Gaps

It is recommended that the following research projects be inaugurated in order of priority:

1. Design and conduct research to reevaluate and revise the statistical data available to the industry for adequacy and timeliness. Standardize the categories or types of operations that are causing increasing confusion in comparing statistics and calculations. A vast multiplicity of categories has resulted in recent years from the individualization of food service operations to achieve merchandising distinctiveness. In many instances, the statistical data presented in trade journals, university publications, and trade association magazines or papers cannot be correlated to data published by the Census Bureau. It is recommended that the data published every 5 years by the Census Bureau be used as a statistical base. The Census Bureau categories should be reclassified. Trade journals, university publications, and trade associations should update the base figures within the 5-year interim.

2. Determine the significant factors which should be evaluated in feasibility studies for different sites and types of food service operations (as classified in item 1). Quantitative values should be placed on these variable factors. Case histories of efficient operations could be analyzed to determine what factors they have in common plus where they differ. Develop mathematical models for electronic data processing, or simplified models for manual calculation, or both. Case histories would evaluate such factors as population growth

and concentration, economic growth, disposable income, family origins, age shifts, travel, recreation, eating-out trends, occupations, education and all other relevant demographic data.

3. Determine the most economical media for communicating the data developed in item 2 to the food service industry.

Industry Statistics and Feasibility Study Abstracts

1. A BIBLIOGRAPHY OF FOODSERVICE MARKET STUDIES, 1968, Institutional Foodservice Manufacturers Association, One E. Wacker Dr., Chicago, Ill. 60601. \$1.

The 100 studies listed in this bibliography were selected by the IFMA Market Research Committee.

A copy of each study is filed in the IFMA Reference Library. Anyone wishing a personal copy is requested to obtain it from the supplying organization. They are provided free of charge in most cases. When a charge is made, cost information is provided by the source.

2. A GUIDE TO SITE SELECTION, 1966, Walter F. Bruning, Operations Bulletin, American Hotel & Motel Association, 221 West 57th Street, New York, N.Y. 10019.

The objective of this bulletin was to review the factors considered by a professional landscape architect in studying the site for a new hotel or motel.

Eighteen factors were listed in the form of questions. Recommendation was made that while inspecting an area, or alternate sites, the advantages and disadvantages of each location be carefully itemized. For detailed search of areas, 12 sources of information were listed.

3. A MANAGEMENT OPPORTUNITY! James Terry Radigan, The Cornell Hotel and Restaurant Administration Quarterly, Vol. 2, No. 1, May 1961, 3 pages.

This was a preliminary report on an intensive study of the economics of the restaurant industry and its relationship to the overall economy. In studying the trends in the industry, it was found that the number of eating and drinking establishments had remained approximately the same since 1948. With the increases in population and income, this meant that the average restaurant increased its volume about 43%. However, most of this increase was absorbed by rises in costs. While some food costs decreased, payrolls increased 27.5% faster but without any changes in productivity.

In relating the restaurant industry with the economy, sales followed retail increases generally, although they were not as sensitive to change. Evidently, restaurants had not learned to compete effectively with the grocery industry. The author questioned pushing off higher costs onto customers and recommended positive efforts to increase sales and employee productivity.

4. A NEW LOOK AT THE PRIVATE CLUB MARKET, 1967,
Club Management, 408 Olive St., St. Louis, Mo. 63102.

The purpose of this study was to document and update past studies made by Club Management and other sources, and to supplement the Institutional Food-service Manufacturers Association-Government study, which did not separate clubs, but included them in an all encompassing category. Questionnaires were mailed to 5,822 subscribers and 4,956 nonsubscribers; returns were 2,634 and 1,656 respectively, or 45.2% subscribers and 33.4% nonsubscribers.

Determination was made that 10,488 of the 20,000-plus private clubs provided food and beverage service of some kind for their members and bought equipment and supplies. Of these, 6,404 were golf and country clubs, 1,767 city clubs, 1,334 military clubs, and 983 fraternal, yacht, bath and tennis clubs. Food sales totaled \$1,476 million and beverage sales \$1,050 million. Food purchases were \$703 million.

5. A REPORT ON PROGRESS IN THE FOOD SERVICE INDUSTRY,
The Editors, Cornell Hotel and Restaurant Administration Quarterly,
Vol. 1, No. 1, May 1960, 23 pages.

Twenty-three leaders in hotels, restaurants, cafeterias, clubs, industrial feeding, hospitals and college dining halls were questioned about what future steps the food service industry plans to take. Included in the study were trends in design and decor, the use of punched cards for control, the role of closed-circuit television, plans for offsetting future labor cost increases, methods for determining menu prices, acceptance of convenience foods, relationships between sales and storage space, food products and preparation equipment that have helped cut costs, the acceptance of china and linen substitutes, and dishwashing mechanization.

The conclusions were that the "soaring sixties" would see many innovations in labor-saving methods and equipment for preparing food. Included also were better supervisory methods, improved training techniques and purchasing methods, and increased use of convenience foods. No radical changes in the standards of service were foreseen.

6. ALERT HOSTS IN THE MARKETING AGE, Edward C. Bursk,
Professor, Harvard School of Business, The Cornell Hotel
and Restaurant Administration Quarterly, Vol. 7, No. 4,
February 1967, 7 pages.

As a result of research in a number of industries, including food service and lodging, this paper applied the marketing concept to hotel and restaurant management. Marketing was defined as the total of all things that a company does, or should do, to affect its relations with its customers. Examples were given how management will more easily make customers the focus of thinking if a dollar value is placed on them--not a static dollar value like real estate but an active dollar value like return on investment. With this idea of customers as investments, management clarifies the problem of how to decide, organize, and operate for total marketing. Product policy, manufacturing, sales and promotion are readily brought together within that one focus--the customer.

7. AN ANALYSIS OF THE VOLUME FEEDING MARKET, 1965,
Volume Feeding Management and Restaurant Equipment Dealer,
205 E. 42nd St., New York, N.Y. 10017.

Because there was no inclusive source in which the statistics of the public feeding market had been intergrated along with the factors that influenced its growth, the Research Department of Volume Feeding Management designed this project to accomplish such an objective. Figures analyzed were assembled from the U.S. Departments of Agriculture, Commerce, and Labor, National Restaurant Association, Institutional Foodservice Manufacturers Association, National Association of Food Equipment Manufacturers, trade publications, and others concerned with the public feeding market. Where gaps appeared, estimates were based on the best yardsticks and records available.

In summary, the value of meals served in the total volume feeding market for 1965 was estimated at \$24.8 billion. Food used was estimated at wholesale value of \$11.6 billion. The 10 principal divisions of the market were given as: Public restaurants, cafeterias, etc., 45.8%; taverns, 2.6%; drug stores, department stores, etc., 7.7%; educational, 12%; hospitals, institutions, 9.4%; hotels/motels, 3.2%; armed forces, min. 3.5%; employee feeding, 4.5%; clubs, 5.2%; all other, 6.1%.

8. AN EARNINGS REPORT FOR FIFTY SELECTED RESTAURANTS,
Elmer W. Kallis and Norman Katy, The Cornell Hotel and
Restaurant Administration Quarterly, Vol. 3, No. 1, May 1962,
5 pages.

This study summarized the earnings of 50 restaurants located in various parts of the country. It reported 1960 earnings and compared them with 1969 results.

Even with an increase of 1.3% in sales volume, net profit in 1960 dropped 13.8% from 1959. This resulted primarily from substantial rises in both payroll and employee benefits expenses, as well as small increases in most of the other expense categories. Restaurants continued more profitable than the operations selling both food and beverages. Better control of food costs and payroll contributed to this success. Neighborhood restaurants were the hardest hit of the food and beverage operations; sales dropped, some expenses rose, and the curtailment of the remaining expenses was not sufficient to offset the effect of the decline in sales.

9. AN OUTLOOK FOR THE FOOD SERVICE INDUSTRY, James Terry
Radigan, The Cornell Hotel and Restaurant Administration Quarterly,
Vol. 3, No. 1, May 1962, 8 pages.

This study had two objectives: (1) To present an economic report on the first quarter of 1962; and (2) to examine the various economic indicators, and to project second quarter results. Prediction was made that the food service industry would grow in 1962. However, the industry was cautioned to avoid extensive capital investments until the trends in the national economy was better refined.

The second part of the report presented some of the preliminary results of an intensive study of eating out habits for the period 1958-62. Statistics were presented showing restaurant and industry sales trends broken down by sales volume. Although the restaurant industry was basically one of small business enterprises, the greatest growth was taking place in those grossing over \$100,000 annually. Overhead costs were also examined, as well as payroll trends, and the conclusion was that managements must work systematically to bring about improvements in operations.

10. BUYING PRACTICES AND FOOD USE OF EMPLOYEE FOOD SERVICES
IN MANUFACTURING PLANTS, 1959, U.S. Department of Agriculture,
Agricultural Marketing Service, Marketing Research Report No. 326.
For sale by Superintendent of Documents, U.S. Government Printing
Office, Washington, D.C. 20402. 75¢.

The objective of this survey was to evaluate the needs, demands, and marketing practices of institutional feeding operations, and was aimed at improving marketing efficiency and expanding markets for farm products.

Data collected in January-February 1956, showed that almost 6,000 manufacturing plants with 250 or more employees--about half of the plants of this size in the United States at that time--provided some type of regular, on-premise food service facility for plant personnel. Nearly two-thirds of the inplant facilities were managed by outside catering firms, usually as an independent business. The yearly expenditure for food was estimated at \$260 million or about 3 percent of the wholesale cost of food handled by all away-from-home eating places.

11. CENSUS OF BUSINESS, Retail Trade U.S. Department of Commerce,
Bureau of the Census, U.S. Government Printing Office,
Washington, D.C.

This statistical report is published every 5 years. Retail business enterprises are classified by the Standard Industrial Code. The food industry is classified in the SIC 5800 series. Statistical data is summarized for the United States, by regions, States, metropolitan areas, and counties. Statistical information concerning sales size, employment size, single units and multiunits, and legal form of organization is presented.

12. CHARTING THE FINANCIAL ROUTE TO SUCCESSFUL RESTAURANT
OPERATION, John D. Lesure, The Cornell Hotel and Restaurant
Administration Quarterly, Vol. 6, No. 4, February 1966, 5 pages.

Financial planning is defined as the ability to project cash requirements in terms of potential revenue and operating costs so that all obligations can be met out of net income. The route to this proper financial planning and the ultimate economic feasibility relies on knowing the market for a particular restaurant's products. Determining market potential begins with market information and the proceeds through an evaluation of present and future developments and trends that will affect a specific operation.

Statistics from U.S. Department of Commerce data show the ratios of purchased meals and beverages to total personal consumption expenditures, and food away-from-home expenditures to total food expenditures for various levels of income. A case study is presented to illustrate the calculations that should be made in determining the economic feasibility of a venture.

13. COMPUTER EVALUATION OF RESTAURANT SITES, Francis R. Cella,
The Cornell Hotel and Restaurant Administration Quarterly,
Vol. 9, No. 3, November 1968, 7 pages.

This report summarized the research conducted at the University of Oklahoma on site evaluation, which was rated as probably the most important yet difficult aspect of decision-making faced by the restaurant manager who wants to invest in a new establishment or expand one already in operation. The computer process was utilized to construct a mathematical model which joined together all the factors which influenced the total volume of business, and each one weighted according to its relative importance.

The model-building process led to the early discovery that the factors involved varied by type of restaurant and by geographic situations. The evaluation of a highway restaurant site in Georgia was presented as an example. The factors involved and their magnitudes were as follows: Traffic count, 14,000; highway location, 1; type of location, 1; number of signs, 2; motel nearness, 3; service station proximity, 4; appearances, 6; distance of signs, 2 miles; hours open, 14; seats, 104; parking spaces, 20; visibility, 2; competitors, 23; years of experience, 12; check average, 95¢; manager's rating, 6. These factors were included in the highway restaurant model and calculations estimated business volume of \$201,000 to \$221,000. Later, this restaurant did \$210,000 in annual business. Developments in electronic data processing made possible calculations that would have been prohibitive otherwise.

14. CONTRACT-OPERATED FOOD SERVICE IN COLLEGES,
James J. Raytek, M.A. Thesis, 1967, The Pennsylvania State
University, Department of Hotel and Institutional Administration,
University Park, Pa. 16802. Interlibrary loan.

It was the purpose of this study to develop a source of information explaining contracted food service programs in colleges and universities. The investigation was divided into three primary sections--the food service contractor, the college, and the food service agreement.

The objectives of the contractor were summarized in the first section as well as the methods of operation and services he renders to the institutions served. In the second section, the advantages and disadvantages of contract food service to the college were discussed and compared. The food service agreement was covered from the standpoint of the survey, the proposal, and the contract. A recommended food service contract and a directory of food service management companies active in the eastern section of the United States were included in the appendix.

15. 1966 EATING AND DRINKING PLACE SURVEY RESULTS,
Washington Report, Marketing Research Sections, (6 Parts),
1967-1968, National Restaurant Association, 1530 N. Lake
Shore Dr., Chicago, Ill. 60610.

The objective of this survey was to determine the values and characteristics of eating places operated by NRA members. A total of 708 usable questionnaires was included in the final tabulations and analysis. The questionnaire was divided into seven parts as follows: (1) Background data about location, type of food service operation, number of hours per week and months per year the business was open, number of full- and part-time employees, and average daily customer count; (2) ownership status--independent, franchise, or chain owned, legal form of organization, ownership of property and equipment; (3) physical characteristics--total floor area and percent devoted to customer space and preparation area, seating capacity, and number of seats by type such as table or counter seats; (4) location factors such as accessibility to a principal highway, shopping center, rural or urban site, plus reasons for choosing area; (5) annual sales volume; (6) occupancy cost data such as estimates of annual payments of principal and interest on mortgage, building depreciation, insurance, property taxes, and utilities--if property leased, annual improvements, and utilities; (7) controllable expenses such as overhead, food costs, payroll, advertising, bookkeeping, repairs, and so forth.

Average sales per establishment were \$376,000 per year. According to the USDA "Survey of the Market for Food Away From Home" in 1966, the average sales for the Nation's public eating establishments were \$53,700. For that reason, whenever possible comparisons were made between the findings of both studies to point out differences and similarities.

16. ECONOMIC FACTORS AND CASE STUDIES IN HOTEL AND
MOTEL VALUATION, 1962, Fred W. Eckert, American
Institute of Real Estate Appraisers, 36 So. Wabash Ave.,
Chicago, Ill. 60603.

This project was designed to review the histories of the hotel and motel industries, along with representative case records of representative units, in order to provide standards in estimating real estate values. Six areas were researched: (1) History; (2) significance of trends; (3) projecting earnings potentials; (4) estimating economic values; (5) useful life of properties; (6) case studies in hotel and motel valuation.

Hotels and motels comprised, in basic fundamentals, one, not two, industries. Since operators considered themselves in two separate industries, analyses of trends were presented from these two points of view. The 6 hotel and 2 motel case studies were analyzed and detailed and culminated in top ratings for investment purposes.

17. FOOD SERVICE IN PRIVATE ELEMENTARY AND SECONDARY SCHOOLS, 1964, Marketing Economics Division, Economic Research Service, United States Department of Agriculture, Marketing Research Report No. 678.

This study was made to determine the current status of private school feeding programs in the United States, the extent to which pupils participate, and to analyze the factors associated with school and pupil participation. Findings were based on a sample of about 5% of the 15,300 private elementary and secondary schools in the 50 States.

About 6,500 (of 15,300) private schools provided food service for their 3 million students in 1962. About 5,000 offered plate lunches under the National School Lunch Program and of the 2.3 million pupils in these schools, about half consumed the school plate lunch on a daily basis. The proportion of private school children having lunches available was highest in the Southeast, Southwest, and Midwest. Three major factors affecting pupil participation were: (1) Size and location of school; (2) prices charged; (3) time allowed for lunch and proximity of the school to homes and, for pupils in secondary schools, availability of alternative eating establishments.

18. FOOD SERVICE IN PUBLIC SCHOOLS, 1964, Marketing Economics Division, Economic Research Service, United States Department of Agriculture, Marketing Research Report No. 681.

The study was made to ascertain the extent of school and pupil participation in school lunch programs and to find what factors were associated with pupil participation in such programs. The survey was also designed to determine trends since March 1957, when a similar study was made, and to obtain information about adding lunch facilities in schools without them.

Food service in public schools rose rapidly. About 2.8 billion lunches were served in 1962, an increase of about 40% over 1957 school year. Sales of lunches totaled an estimated \$900 million in 1962. To provide more children with nutritious lunches, a twofold effort was recommended: (1) Increase pupil participation because almost 50% of pupils -- more than 15 million -- did not take the school lunch on a daily basis in 1962, and (2) facilitate the establishment of lunch service because necessary arrangements were lacking or the burden of needy children was too great for the community to support a school feeding program.

19. 1966 INDEX OF RESTAURANT BUYING POWER, Fast Foods, January 1968 (issued annually), 10 pages.

The objective of this analysis was to provide eating and drinking place sales in 301 key metropolitan areas, and rankings with State-by-State totals. The estimates of 1966 eating and drinking place sales were based on data prepared by Market Statistics, Inc., for the 1967 edition of Sales Management's Survey of Buying Power.

Restaurant sales in 1966 reached an all time high of \$19.1 billion. The gain of 11% was one of the highest registered among the major retail store categories and outdistanced the 2.7% achieved by drinking places. The top 20 metropolitan areas, with only one-third of the Nation's population enjoyed 43% of restaurant sales, while the top 50 metropolitan areas accounted for almost 60%. All 301 of the metropolitan areas in the Nation accounted for more than 82% of restaurant sales, but had only 73% of the population.

20. INSTITUTIONS 400: THE 1967 ANNUAL REPORT OF THE SERVICE WORLD, Institutions Magazine, July 1967, 58 pages.

The objective of this report was to present a ranking of food services provided by the 400 largest organizations. Dollar volume was computed for the latest fiscal year. Rank for franchise groups included sales of both company owned and franchised units. For comparison, noncommercial organizations were assigned commercial equivalents--1.5 times food budget for universities, 2.5 times food budget for State institutions and schools. Travel service equivalents were based on food budget plus a one-third adjustment.

1967 was a year of shifting positions and a struggle to maintain rank. Organizations at the top increased food service volume as much as 32.9%, yet remained in the same position as the previous year. One company's volume increased 22.3% but it actually dropped in rank. Gross annual food service increased 16.8% while total units increased 11.8%.

21. INSTITUTIONS 400: THE FOURTH ANNUAL REPORT OF THE FOOD SERVICE/LODGING FIELD, Institutions Magazine July 1968, 72 pages.

This report was designed to analyze the comparative volume of the top 400 food service operations 1965 through 1968, the total units controlled by the 400, the 25 principal growth organizations, the food/labor cost per meal, and the power structure in 1968.

The top 400 were 150% larger in 1968 than in 1965, and predictions were made that volume will move past the 200% mark by 1973. Food service/lodging was growing at a rate of over 6% despite the inflationary trend and the highest labor and food costs in history. In 1967, stocks of 49 food service/lodging companies advanced an average of 165%; during the same year, the Dow Jones Industrial Average rose 11%. Mergers increased considerably. Expansion-minded conglomerates and food processors used the merger-acquisition route for entering into food service/lodging.

22. NEW FOODSERVICE MARKET: THE OLD, Bruce Smith, Cooking for Profit, August 1966.

The objective of this study was to detail the boom in nursing home development. On the first day of 1967, approximately 18 million persons became eligible for 100 days of nursing home care under the provisions of Medicare.

To meet the suddenly expanded market, prediction was made that over 77,000 beds would be added in 1967 and more than 150,000 in 1968. While there were 13,000 nursing homes in the United States, over 9,000 did not qualify for Medicare-sponsored patient care. The most important reason was that only 4,100 nursing homes employed registered nurses. Key factors in designing for the elderly were: (1) Weak vision -- dining areas and all facilities should be well-lighted; (2) non-active -- menus should take into consideration limited amount of exercise; (3) physical weakness -- service should amount to actual care; (4) need for sense of security -- dining areas should be intimate and recreational areas warm and comfortable. A number of corporations were formed to build and operate large nursing homes.

23. RECONNAISSANCE REPORT: CONSUMER EXPENDITURES
1966- AWAY FROM HOME GOOD AND HOUSING, Reconnaissance,
Inc., 1801 Prairie Ave., Chicago, Ill. 60616.

The objective of this study was to distill from the 1966 National Industrial Conference Board report those statistics that revealed what consumers spent for eating out and housing away from home.

The various charts revealed demographic characteristics of the heavy buyers for food and housing services, with comparative tables for total expenditures, all housing, travel and recreation. Data included expenditures from household budgets only, excluding expense account purchases, teenagers' allowances, and similar expenditures.

24. RESTAURANT GROWTH INDEX 1968, Fast Food,
January 1968, 27 pages.

The objective of this project was to obtain an index of growth potentials within the various segments of the food service market. Data were obtained in all parts of the United States through personal interviews with executives of the larger operating companies over a period of 6 months. It was thought that since the restaurant industry had never developed a way to gather its own statistics for its own use, this study would create more interest in pooling knowledge in order to set the direction and control and conditions under which the food service industry could grow and prosper.

The growth index was divided into 12 sections representing the distinct segments of the food service industry. Within each segment was shown the annual volume, annual growth rate, trends in the making, menu and service demands, the pace setters, plus a summary of the comments and statistics supplied by the food service executives. Five patterns of change were also presented.

25. REVIEW AND SUMMARY OF THE PUBLISHED LITERATURE ON
EATING OUT, 1964, J. Walter Thompson Co., for National Restaurant
Association, 1530, N. Lake Shore Drive, Chicago, Ill. 60610.

The purpose of this report was to summarize published information related to eating out by Americans. Seven studies were included in the analysis.

Three of these research reports considered most important were conducted by food suppliers for the National Restaurant Association plus a fourth by J. Walter Thompson Company in 1956.

Men with high incomes who lived in large cities ate out most frequently. Families eating out most frequently chose Sundays, Saturdays, and Fridays, in that order. Over half of all meals eaten out were by one family member in the company of one person or more. Half of the families expressed the wish to eat out more often, especially where parents and children were young. Reasons for liking to eat out and for choosing specific restaurants and foods were also enumerated.

26. SIGNIFICANT TRENDS in the MOTEL and MOTOR HOTEL INDUSTRY, 1966, Eugene H. Lott of Laventhol, Krekstein, Horwath & Horwath, 41 East 42nd Street, New York, N.Y. 10017.

Because the real estate industry was in a period of tight money and high interest rates, and because times were difficult for anyone in the business of determining value of property or of estimating the economic feasibility of proposed real estate development, the objective of this paper was to review the research into significant trends that would affect the motel and motor-hotel industry and to determine how best to utilize them.

Judgment was expressed that only selective expansion would tend to protect and possibly even enhance the value of operations in the motel and motor hotel field. Changes in methods of travel and in demands of the traveling public were developing a hybrid between the motor courts of the 1930's and the great downtown hotels. Changes in the type of investor, in methods of financing construction, and the effects of franchising had removed a built-in margin for error. Skill in selecting and developing sites had become mandatory.

27. SIZING UP RESTAURANT LOCATION, J. Terry Radigan, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

The objective of this study was to research the experience of operators in choosing locations and developing restaurants on them so that persons searching for new sites or evaluating sites already occupied could be provided with guidelines to follow. Attention was directed to the factors and changes that caused certain locations to improve and other to decline.

The resulting program began with an evaluation of the community as a whole and with particular emphasis on trends in land-use patterns and transportation arteries, plus shifts taking place as the community expanded or shrank. The value of a location for a restaurant was judged upon four factors: (1) Accessibility to the resident population; (2) accessibility to people moving about or gathering together; (3) physical desirability from the standpoint of grade or level, appearance, size, shape, neighborhood, or district environment; (4) history and reputation. Optimum size and type of restaurant depended on population, ages, incomes, consumer preferences, and other characteristics of the area. The values of employing a consultant were also presented.

28. 1966 STUDY OF CURB-SERVICE DRIVE-IN RESTAURANTS,
John D. Lesure of Laventhol, Krekstein, Horwath & Horwath,
41 E. 42nd St., New York, N.Y. 10017.

The object of this study was to collect all relevant data available in 1966 related to curb-service drive-in restaurants in major metropolitan areas of the United States and to make comparisons with a similar study made in 1963.

The findings of the 1966 study indicated that there was a growing trend toward franchise and chain identification. Drive-ins were most popular among teenagers and young married couples. They were usually located in the suburbs of large cities, near concentrations of private homes and apartments occupied by people in the middle- or low- income groups. Of the total menus received, 65% were limited and 35% were complete with selections of appetizer and entree combinations. In major metropolitan areas, 50% of the year-round operations with curb service had volumes in excess of \$200,000 annually.

29. THE COMMERCIAL LODGING MARKET, Robert L. Blomstrom,
1967, School of Hotel, Restaurant, and Institutional Management,
Graduate School of Business Administration, Michigan State
University, East Lansing, Mich. 48823. \$7.50.

This market research project, initiated by the American Hotel and Motel Association, was directed to find out as much as possible about commercial lodging customers so that owners and managers of various establishments might define existing markets more effectively or develop new markets. Names of 6,000 hotel guests were selected for this study from the records of AH & MA member establishments in 10 States that represented the 10 regions of the United States. A total of 2,350 usable questionnaires was returned.

In the report, the demographic data provided information about who the lodging customers were -- age, sex, marital status, education, income, and occupation. Additional findings described where customers traveled and when they traveled during their last stay; what they did before and after they arrived, and how they accomplished their travel and lodging objectives. Other areas reported were: the pricing structure, expense accounts and credit cards, and customer eating habits and patterns. In Appendix B, the findings of this research were compared with other national travel and lodging establishment customer surveys.

30. THE DRIVE-IN MARKET 1965, Drive-In Management,
Ojibway Bldg., Duluth, Minn. 55802.

The purpose of this survey was to: (1) Compile statistically accurate information on every phase of the drive-in operation; (2) note trends in the industry; and (3) obtain a precise picture of the average operator. A sampling of 5,005 drive-ins was chosen for the survey and 661 qualified survey questionnaires were obtained.

As of June, 1965, there were approximately 40,000 drive-in restaurants throughout the United States - 82.6% had been in the drive-in food service

businesses, and 7.8% of this group indicated that they were partially franchised (such as chicken.) Of the present operators, 38.2% planned to open additional units. Other information included in the report were detailed operating statistics, equipment used, foods sold, supplies used, and most pressing problems.

31. THE ECONOMISTS' VIEW OF THE FOOD SERVICE INDUSTRY, 1966, Arno H. Johnson, V.P., J. Walter Thompson Co., 420 Lexington Ave., New York, N.Y. 10017.

Eight major factors of economic and social change were researched in detail and projected over a 10- year period to determine the potential growth of the food service industry by 1975.

Prediction was made that total consumer expenditures for purchased meals and beverages, which at the end of 1965 were at the rate of \$20 billion annually, could more than double by 1975 -- a potential market (in 1966 constant dollars) of well over \$40 billion. The eight factors on which this increase was based follow: (1) Enough economic growth to provide 20 million more jobs; (2) greater discretionary spending power brought about by economic growth and increased productivity; (3) upward movement in education level; (4) larger families; (5) growth in population with a rapidly growing segment of adolescents; (6) more married women workers; (7) mobility of population and movement to urban areas; and (8) increased advertising and public relations efforts.

32. THE EMPLOYEE FEEDING MARKET 1966, Plant and Business Food Management, Ojibway Bldg., Duluth, Minn. 55802.

Since precise data is not available from any source, this study was made to develop an estimate of the size of the 1966 employee feeding market. The objectives were to establish: (1) The number of operations in that segment of the market; (2) the amount spent for food purchases during a given period.

In 1966, there were 14,087 establishments with 250 or more employees which had food service facilities, including 9,704 manufacturing and 4,383 nonmanufacturing establishments. The average annual expenditure per establishment was \$77,616. Those that operated their own feeding facilities numbered 6,121 and 7,966 establishments were operated by food contractors.

33. THE FOOD SERVICE INDUSTRY: ITS STRUCTURE AND CHARACTERISTICS, 1966, Economic Research Service, Marketing Economics Division, U.S. Department of Agriculture Statistical Bulletin No. 416.

This Phase I of a two-part study grew out of the increasing importance of the market for food away from home and the necessity of establishing a broad data bank of statistics to permit analysis of this market from various points of interest. The U.S. Department of Agriculture focused on the need to improve the efficiency of the marketing process, to develop and expand markets for farm products, and to examine the impact of developments in this market on farm income and on food prices. Firms that process and distribute food and provide

other supplies, equipment, and services used by this market had direct need for more information as a basis for evaluating their immediate and future production and marketing efforts to meet the needs of the industry. The managers of establishments that are primarily eating places and of other kinds of businesses that offer food service recognized the need for better statistics for an industry undergoing rapid change.

With these common interests, the Department and the food and equipment industries joined in a cooperative effort and combined resources to study the way-from-home market for food and equipment. All food service operations in the 48 contiguous States offering meals, snacks, or beverages for onpremise or immediate consumption were sampled except those that operate in conjunction with elementary and secondary schools, the military services, Federal hospitals, Federal and State correctional institutions, in-transit feeding operations, and boarding houses.

The study was divided into two parts. Data provided from Phase I was concerned with: (1) The structure of the food services industry; (2) the economic characteristics; and (3) the physical details of establishments that comprise it. Information relating to the establishments' location, size, customers, workers, menu specialty, years in operation, ownership, food procurement practices and methods of ordering; plus information on the frequency of ordering and deliveries, types of food service equipment, and nonfood supplies are examples of data included in the 237 tables.

In Phase II of the survey, planned for 1968, detailed information will be obtained on quantities of food received, by product form, container size, and price.

Leadership in organizing the food service industry's contribution to this entire study was provided by the Institutional Foodservice Manufacturers Association, National Restaurant Association, and the National Association of Food Equipment Manufacturers.

34. THE HOSPITAL & NURSING HOME FEEDING MARKET 1966,
Hospital & Nursing Home Food Management, Ojibway Bldg.,
Duluth, Minn. 55802

Because there was no one source that could provide data on the number of establishments in the hospital and nursing home feeding market, this study was designed to analyze the available data regarding all hospitals, licensed nursing care homes, and retirement centers with centralized food service, and then to estimate the amounts of foods purchased by each.

In 1966, there were 7,479 hospitals which spent \$756 million for food. Nursing homes with 50 or more beds numbered 5,297 and spent \$182 million for food. No figures were available on food expenditures of retirement centers but estimates of over \$60 million were developed. Estimates were also made of the number of persons 65 years of age and over who would be eligible for Medicare through 1980.

35. THE MARKET-FEASIBILITY STUDY IN FOOD FACILITIES PLANNING, Henry W. Esperson, Laventhol, Krekstein, Horwath & Horwath, The Cornell Hotel and Restaurant Administration Quarterly, Vol. 7, No. 1, May 1966, 7 pages.

This study was designed to answer the questions whether investments should be undertaken in (1) a proposed new restaurant, or (2) the expansion or renovation of an existing one.

Recommendation was made that an independent analyst or consulting firm be engaged because of its objectivity. Study of location was considered primary in making a feasibility study. Other factors considered included: Management objectives and preliminary plans; survey of the market and marketing area; detailed costs of land, planning and construction; costs of furnishing and equipping in service, food preparation, and storage areas; investments in operating and service equipment; and working capital and current liabilities. All of this resulted in a projection, or proforma, whether the project would be profitable, or modified to the point that it could be economically feasible.

36. THE MARKET FOR FOOD IN THE NATION'S SCHOOLS, 1965, Economic Research Service, United States Department of Agriculture, Marketing Research Report No. 702.

The objective of this study was to provide a current measure of the school food market, and to reflect shifts in quantities and types of food served in school lunchrooms. It also evaluated trends in school feeding and identified areas warranting special attention in the National School Lunch and Special Milk programs of the USDA.

During 1962-63, foods with a wholesale value of \$929 million moved through lunchrooms in about 66,000 public elementary and secondary schools. Additional foods valued at \$77 million were used in approximately 6,500 private schools. Total foods used amounted to about \$1 billion. In 1957-58, public school lunchrooms were providing an outlet for foods valued at \$597 million. This, then, was a gain of \$332 million or 56% by 1962-63. Expansion of the school food market resulted primarily from larger enrollment and increasing availability of school lunch services. In spite of these gains, 14 million pupils, or 40% of total enrollment, were not consuming plate lunches on a daily basis. Twenty-five charts were published.

37. THE NEW FOOD SERVICE OPERATION: PROGRAMMING, PLANNING AND DESIGN CHECK LIST, Prof. O. Ernest Bangs, The Cornell Hotel and Restaurant Administration Quarterly, Vol. 7, No. 1, May 1966, 7 pages.

The objective of this report was to outline the development of a program that made a new food service operation a success from its inception. All principal objectives were well established in creating the preliminary program. Then all ideas were researched, analyzed, evaluated and refined. The resulting prospectus was designed to cover and define all the management objectives and requirements.

The master plan that resulted could be applied not only to the creation of a totally new project but also to the evaluation, expansion or renovation of an existing establishment. In addition to forecasting the most profitable size, the master plan involved the complete building interior and food service facilities, including areas of receiving, storage, production, and food service, plus warehousing, waste removal, cleaning, and maintenance.

38. THE NINTH ANNUAL STUDY OF RESTAURANT OPERATIONS, 1966,
Elmer W. Kallio, Norman Katz of Laventhol, Krekstein,
Horwath & Horwath, 41 E. 42nd Street, New York, N.Y. 10017.

This study was based on the data of 79 restaurants located in different parts of the country. The units were primarily table-service operations, but a number offered some counter service. The objective was to compare data with 1965 results.

The 79 restaurants included in the study had total sales of over \$53 million, nearly 5% higher than in 1965. Total cost of sales was \$19.7 million, up slightly more than 3%. Total payroll and related expense was \$18.8 million, a rise of 7%. Profits before occupation costs and depreciation were 5% higher overall but center-city restaurants selling both food and beverages were down 7%. Net profits before income taxes were up 3%, a smaller proportion of total sales than in 1965. The conclusion was that sales volume increases were generally sufficient to offset rises in costs and expenses, but the plight of center-city restaurants emphasized the importance of good management and strict controls to avoid a profit squeeze.

39. THE RESTAURANT AND THE QUIET REVOLUTION, Edward J. Smith,
The Cornell Hotel and Restaurant Administration Quarterly,
Vol. 3, No. 1, May 1962, 7 pages.

The purpose of this study was to determine the possible changes in the restaurant industry based on past trends. The author looked at some of the changes taking place in the restaurant industry and, particularly, the development of large corporate organizations. He noted that similar changes had taken place in the retail grocery industry. The changes in the retail grocery industry were then traced with the thought that these might provide insights into the future of the food service industry.

The author noted that the grocery store's solution, in part, was to utilize collective purchasing and to offer a minimum of customer services. It was believed that a vertical integration of restaurant operations--purchasing, food production, merchandising--might provide the advantages grocers obtained through belonging to purchasing affiliations or chain operations.

40. THE RESTAURANT BUSINESS: MARKETING MAKES THE MENU,
Sales Management, October 1, 1965.

This review considered why: (1) Expanding population appeared to offer restaurant operators and stockholders a lucrative future. (2) The restaurant

chains were getting larger and expansion was the order of the day. (3) Behind the boom appeared serious problems that modern marketing was being called upon to solve.

A survey by the National Restaurant Association showed that the average restaurant made a net profit after taxes between 0.3% and 0.7%. The failure rate was high. However, the larger chains and restaurants were growing in size and profit returns. A prediction was made that by 1975 six major companies would be determining the future of all food service operations. The major weaknesses plaguing the entire industry were cited as labor shortages, minimum wage legislation, shortages of executive talent, and a lack of research. The movement toward mergers, definitions of markets, and modern marketing procedures were offered as means of inducing fresh and innovative management into the industry.

41. THE SCHOOL AND COLLEGE FEEDING MARKET 1966,
School and College Food Management, Ojibway Bldg.,
Duluth, Minn. 55802.

The objective of this research was to integrate the studies of the U.S. Department of Agriculture, U.S. Department of Health, Education, and Welfare, and Marketing and Advertising Associates, and then to project them into estimates of food purchases during 1966.

The school and college market used \$1,489 million worth of food in 1966. Public and private primary and secondary schools used \$1,088 million worth of food in 1966--the total offering food service was 76,774. Colleges and universities spent \$401 million for food in 1966. In the report, quantities and values of foods used in public and private schools July 1962 through June 1963 were also given.

42. THE U.S. EATING-OUT MARKET, Editors, The Cornell Hotel and
Restaurant Administration Quarterly, Vol. 8, No. 2,
August 1967, 3 pages.

This article, designed from the operator's point of view, was a summary of a 2-year study made by USDA in cooperation with NRA and IFMA. Information for the study was collected by means of 6,000 personal interviews held with food service operators.

In 1966, \$22 billion was spent for food and beverages away from home. Some kind of food service was offered by 367,000 establishments, 70% of which grossed under \$50,000. Of all establishments included, 55% were separate eating places--restaurants, drive-ins, cafeterias, and so forth--representing 57% of total market sales. Also reported were such characteristics as menus offered, the number and type of customers served, food cost percentages, sources of food supply, methods of ordering, frequency of deliveries, capital equipment, and nonfood supplies.

43. TRENDS IN THE HOTEL-MOTEL BUSINESS, ANNUALLY SINCE 1939, Harris, Kerr, Forster & Co., 420 Lexington Ave., New York, N.Y. 10017.

There were three objectives incorporated in each of the recent annual reports: (1) Citing and characterizing the latest and most important trends in the accommodations industry; (2) relating these trends to the national economy; (3) providing useful, practical operating data as decision-making criteria for hotel and motel management, as well as for others interested in the industry. In the 1966 review, the sample consisted of 400 hotels with 166,589 available guest rooms and 300 motels and motor hotels with 39,257 available guest rooms. The 700 properties were located in 301 cities and towns in 50 States. Their combined revenues approximated \$1.34 billion, or one-fourth of the gross receipts of all hotels and motels of the United States.

Approximately 40 tables and charts were presented to provide managements with bases for comparisons (1) detailed analysis of over-all operating results; (2) results of individual types of operations. Trends were traced back to 1939 and more recent periods.

44. WASHINGTON, D.C. THE INSIDER'S CITY, 1966, Reconnaissance, Inc., 1801 S. Prairie Avenue, Chicago, Ill. 60616. \$40.

In researching and preparing this marketing report on the Nation's capital, all pertinent studies were evaluated and facts and figures summarized to serve as a marketing guide from site selection to profits for food service operators and as a sales guide for top executives in manufacturing and distributing organizations.

Listed in the table of contents were these 11 principal sections of charts, tables, and maps. (1) The Many Eating-Out Markets in Washington; (2) The Hotel Picture; (3) Washington's Customers; (4) Employee Feeding - A Defined Market; (5) Headquarters' Town-Institutions Management Complexes; (6) New Construction; (7) Health, Education, and Welfare; (8) Doing Business in Washington; (9) Further Sources of Information; (10) The State of Service and Supply; (11) Index to Institutions.

Also available: Denver-Opportunity In the Rockies \$25.

In preparation in this series: Atlanta, Dallas, Fort Worth, Los Angeles, Chicago, New York, St. Louis, Philadelphia, Orlando/Cape Kennedy Complex, Boston, Detroit.

Additional Reference Sources in This Report Pertaining to Industry Statistics and Feasibility Studies

In addition to foregoing abstracts, additional information pertaining to the subject may be found in the following abstracts which are presented elsewhere in this report:

Abstract No.Publication Title

179	An Analysis of the Factors Considered By Commercial Banks in Granting Capital Loans for a Proposed Restaurant
194	Franchise Company Data--For Equal Opportunity in Business
195	Franchise Management: Its Far- Reaching Effect on Food Service
203	Starting and Managing a Small Restaurant
209	Who's Franchising What?

MERCHANDISING

The term "merchandising" in this report is defined as a comprehensive sales promotion function which includes market research for specific menu items, the development of new menu items, the provision of a pleasant dining environment which includes customer service, effective advertising and selling, and the coordination of purchasing and food production. Several of the participants in this study defined merchandising as "doing everything necessary to stimulate and satisfy the needs of people."

Eating is not only a physical but an emotional experience. Merchandising represents an area where the skills and insights of social scientists can be utilized much more than they have been in the past to determine what, in person-to-person relations and marketing, influences persons to choose various eating places under different circumstances to satisfy their conscious and subconscious needs, and then to return time and time again. Studies in the food service industry have been confined to the analyses of top-of-the-head answers. A deeper understanding of dining out habits and motivation will provide the knowledge that will make for more certain success in the increasingly competitive future.

In general, as people become more affluent they not only eat out more often but their needs, tastes and demands change. When some persons first achieve higher incomes and begin to "celebrate" more frequently, they abandon their former routines and seek out eating places which offer treats that they had wished for but had seldom or never experienced before. Eating a routine business lunch in a restaurant is far different from entertaining customers, prospects, or guests in the same place. Of late, hospitals provide more interesting and flavorful food, but many do not realize that mealtimes provide some patients with the only activity they have during the day, and that personal attention plus a degree of ceremony becomes most rewarding. For many children, the school lunch provides them with much more interesting companionship and nutritious food than they get at home.

In profitmaking operations, menu development and renewal still have to be programmed into systems. Although the menu has been the blueprint of all restaurant operations, the creation of most menus has been individualized and highly impressionistic. Some individual operators and chains have set up methods of testing menu items for popularity, and of creating a menu mix that will yield the largest total volume and profits. The few of these that have been reported were sketchy, and cannot be considered as research studies of practical value to others in the industry.

Several knowledgeable executives interviewed during this project stated that to eliminate costly guesswork and imitation in menu development, it is necessary to reach beyond one's own preferences and superficial tabulations of menu orders by items and to conduct in-depth research into consumer needs. This is important because there is still a great deal of confusion about foods preferred at home and foods that are most gratifying when eating out or entertaining.

Another area in which research has been lacking is on the impacts of menus served in schools, colleges, hospitals, and other "captive" groups. Some operators believe that thoughtfully selected menus and presentations can change food preferences, interests in nutritional values, and eating habits. For example, one university has set up a gourmet-type restaurant on campus where students and faculty can eat and/or entertain; in addition, at least one gourmet item is included on every cafeteria and dining hall menu. The objective is to upgrade food preferences.

The greatest advances are being made through the use of computers in hospitals, plus some colleges and school systems where systematic programs of dietetics, menu development and renewal are being perfected. Considerable time and money are being saved even by those who do not have computers or shared time available when they follow the same basic principles. Cycle menus take into consideration seasonal consumer preferences, specific dietary needs, seasonal materials and costs, averaging food costs, and merchandising lower cost items. With the use of computers, the menu becomes the key to cost, purchasing, inventory and use controls.

As people become more affluent and eat out more often, the "front of the house" assumes greater importance in satisfying customers and attracting prospects. It is important to explore how layout, decor menu and service methods can be made most rewarding when based on research and experimentation. For example, one successful operator who participated in this study found his food and operating costs increasing so rapidly that he had to raise menu prices, only to discover that he began losing customers and sales. After puzzling over this problem with friendly competitors who had renovated their places, he decided to rearrange and redecorate, and to add some more profitable items to a new menu. Volume grew, service improved and profits began to rise to a more satisfactory level. All of this resulted from a modest amount of research and analysis.

While some nonprofit feeding operations have improved their service areas and methods with gratifying results, studies should be conducted to determine what factors are most important in different types and sizes of operations. Merely trying to keep costs down, and services and surroundings at inexpensive and uninteresting levels, betray management's lack of interest in satisfying the needs and stimulating the interests of their diners and/or patients.

Dining and food service areas are the only environment in which the nutritional, emotional and psychological needs of people are gratified or else frustrated into disappointment. While many managers of various types of operations believe that the structural and decorative influences that lead to acceptances or rejections are matters of individual judgments, a few theoretical papers have been written by social scientists and dietitians that suggest the merit of further systematic research in these areas.

Several architectural and decorator design firms have achieved outstanding results in the food service areas of some establishments. However, from the absence of reports, it appears that little research has been conducted to determine the specific marketing objectives in a representative sample of dining areas and the principles followed in accomplishing them. Food service magazines publish photographs and brief descriptions of unusual and outstanding installations. Displays of photographs are exhibited at trade shows. From these, it appears that successful decor has resulted primarily from individual tastes and previous experiences.

More should also be known about the economic dynamics involved. As families become more affluent, they eat out more. Why? Restaurants that are, and appear, most successful (regardless of menu prices) draw the greatest volume even during off-hours. Why? What are the basic attractions of the more expensive restaurants?

Although labor costs are shaping an increasing trend toward more self-service, there will always be a demand for personal service. Much more should be learned about personal service and why so many operators have failed to realize that such service and the human relations involved depend on interest, motivation and skills. Much more should also be determined about self-service and how to eliminate dullness and stimulate the interest that will result in gratification and increase the desire to repeat the experience.

Research Gaps

It is recommended that the following research projects be inaugurated in order of priority.

1. The relative importance of various factors which may have a significant impact upon merchandising such as menu pricing, menu variety, physical environment, gratification of psychological needs, advertising, and so forth should be quantitatively evaluated. Approximate evaluations of the relative importance of these factors could be determined in a preliminary or pilot research study by (1) determining consumer requirements for specific types of food service operations, and (2) evaluating the merchandising practices in successful food service operations by type to determine the degree of correlation to consumer requirements.

2. Based on the findings of the research described in item 1, the following research might possibly be inaugurated but not necessarily in the sequence presented:

a) A study and analysis should be made of case histories in which the objectives of engineers, designers, architects and consultants resulted in successful food service operations. Such studies should be coupled with the full range of basic research into lighting and decor which will also provide findings about lights, colors, textures, styles, and so forth. This will increase the effectiveness of planning service areas for greatest enjoyment and gratification.

b) All food service operations will benefit from studies made of emotional, psychological and nutritional effects of the various services provided patients and persons involved in "captive" groups such as hospitals, nursing homes, colleges, schools, in-plant and in-office situations. Quantitative measures and mathematical models can be developed for these factors and projections made with computers. Most universities, hospitals, and manufacturing plants have data processing equipment that can be used for this purpose.

c) Case studies of operations providing fast, gracious, and thoughtful service should be conducted. While some such experiences have been reported recently, much more rapid progress can be made if a representative sample of operations can be researched. These case studies will reveal the methods, principles, and objectives involved for the guidance of the entire food service industry.

d) Research into various types of operations (individual units, chains, franchise operations, and so forth) to determine how they built their merchandising systems to meet their total marketing goals. This research will lead to greater returns on capital investment, in services, advertising, promotion, special events, and other means of holding customers and attracting new ones. There appears to be little realization that successful food service merchandising and promotion is a part of a total marketing operation designed to satisfy the needs of specific groups of consumers.

e) Conduct research to determine the image that the public has concerning food. For example, pork is equated with fat by some people, unclean by others, yet thoroughly delightful when served Chinese style. Form is also important. Beef is easy to eat but chicken has to be trimmed from bones and the remains on the plate arouse guilt feelings of waste. Teenagers prefer hamburgers. Is this because hamburgers are easy to eat and the cost is relatively low? Or are the taste buds of teenagers more highly developed and they enjoy hamburgers more than blander foods? How do childhood eating experiences affect later food preferences? What is necessary to stimulate adventuresomeness in ordering new foods? Once such evidence is assembled it will be possible to set up criteria for successful menus in all types of food services.

f) The effects of using electronic data processing equipment for menu planning in nonprofit organizations should be researched. Fear is being expressed that, in relation to menus, such complete use of figures is tending to depersonalize and dehumanize thinking about flavors, quality, and other factors that lead to consumer gratifications. This subject should be researched to avoid the deterioration of menu development and renewal.

g) The impact of advertising upon sales should be researched. Answers to such questions as the following should be answered: What sales volume is

generated per advertising dollar spent? What types or groups are most influenced by advertising? What distances are patrons willing to travel to food service operations as a result of advertising?

Merchandising Abstracts

45. A GUIDE TO FLOOR TOPPINGS, 1967, B. Berkeley and M. M. Rosenkranz, Foster D. Snell, Inc., for American Hotel and Motel Association, 221 West 57th Street, New York, N.Y. 10019. \$1.

This project was conducted to evaluate the variety of resinous floor systems, called toppings, that form continuous or seamless on-site floors over new or existing subfloors. These new types of floors were studied in lobbies, entranceways, kitchens, bathrooms, laundries, garages and other service areas.

In only two areas were toppings not applicable: (1) Those requiring noise control, since most toppings transmitted impact sounds and did not reduce airborne noise; (2) where there was a preference for the special aesthetic effects associated with carpets and resilient floor covering. Four basic resinous binders were described in incomplete detail--epoxies, polyesters, polyurethanes, and silicones--as used to provide four basic flooring systems including mortars, reinforced systems, resinous terrazzo, and unmodified topping or enamels.

46. A GUIDE TO INDOOR-OUTDOOR CARPETS, 1967, B. Berkeley, Foster D. Snell, Inc., for The Educational Institute of the American Hotel & Motel Association, 221 West 57th St., New York, N.Y. 10019. \$1.50.

The objective of this study was to summarize the serviceability, installation, and maintenance of the relatively new floor coverings made of polypropylene, saran, nylon, vinyl and vinylized kraft.

Three types of construction for indoor-outdoor carpets were outlined in detail. Twenty brand name products were listed and descriptions included date first introduced as well as price per square yard.

47. A SURVEY OF MEAT USE IN RESTAURANTS IN A MAJOR METROPOLITAN AREA OF THE U.S., M. B. Kirtley, Department of Agricultural Economics, University of Illinois College of Agriculture. Food Service Research Digest, Winter, 1964-65, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

This study was initiated to determine some of the characteristics of meat usage by commercial eating places, and to develop facts that would be helpful in appraising future markets for meat. Trade practices and distribution channels were also studied with the objective of improving efficiency in this section of the market. A random sample of firms was drawn from the restaurant listing in the telephone directory and then supplemented with members of the National Restaurant Association similarly selected.

With people eating more meals in commercial eating places, demands on the meat industry will increase. The major demand will be for beef of higher grades with specifications becoming more exact. The demand for pork will probably decrease. Judgment was made that the development of portion control items would help to strengthen the position of pork. Detailed information was given throughout the report.

48. A "TRIP" EVERY THURSDAY BOOSTS DINING HALL SALES,
College and University Business, Vol. 43, No. 2,
August 1967.

Because Queens College of the City University of New York offers 13 different plans of study in 9 different countries, the objectives of this project was to stimulate interest in this international program by serving lunch and dinner menus characteristic of such places as Africa, Brazil, France, Germany, India, Israel, Japan, Russia, and Spain. Every Thursday was made an "International Day."

There was a significant increase in hot food sales on International Days. At the same time a 40-percent food cost was maintained. The price for the special meals, as well as the number of items served, remained the same as for the standard menu. When the program was being planned, students and faculty from the nations featured, as well as the consultants, were consulted regarding menus, recipes and decorations, which added noticeably to the interest in each feature.

49. ALL AMERICAN FOOD, Institutions Magazine,
May 1968, 22 pages.

The objective of this presentation was to learn the extent to which American food service was created from an abundance of native ingredients, promotion programs, regional specialties, improving products and equipment, the favorite dishes of ethnic groups, the desire to experiment, time and labor saving methods--and then to translate these into specific menu and merchandising opportunities for various categories of operations.

The regional areas considered consisted of New England, Southeast, Midwest, South, West and Southwest. In each area, the abundant and best liked foods were described along with developments that have taken place over the years. The 42 most popular recipes served by specific restaurants, hotels, colleges and department stores were presented in practical detail and many illustrated in full color.

50. ANALYSIS OF U.S. ARMY FOOD PREFERENCE SURVEY (1963),
Technical Report 67-15-PR, May 1967. Pioneering Research
Division, U.S. Army Natick Laboratories, Natick, Mass. 01760.

The purposes of this study conducted in February 1963 were to: (1) Assess soldiers' attitudes toward various foods; (2) determine the relationship between these attitudes and certain personal and demographic characteristics; (3) show

how these data can be used by people directly or indirectly responsible for Army feeding; (4) formulate hypotheses and generalizations concerning food attitudes. A sample of over 20,000 men was randomly selected from among Army enlisted personnel in the Zone of the Interior. Information was obtained about each respondent's current military status and about certain features of his background. Each of 263 food names was rated on a 9-point hedonic scale by about 2,000 men.

In the analysis, foods were grouped into 11 classes. The relationship between preferences and respondent's background was examined for 13 characteristics. The major presentation of results was in the form of 263 individual summary tables and 11 food class summary tables. The findings constituted a major part of the core knowledge for a food acceptance research program.

51. APPLICATIONS OF DATA PROCESSING TO DIETETICS, Rosemary

A. McConkey, The Canadian Dietetic Association Journal, March 1967.

The evolution of electronic data processing was reviewed. Specifically stressed were computer-assisted menu planning and the role of the manager or dietitian in an interactive process with the computer to adjust for palatability. Another method of menu planning which includes palatability factors was shown as practical for hospitals or school food service. Applications in a food service information system for management decision making were also reviewed.

The use of computer model systems for preparing undergraduate and graduate students was described as a means of preparing future managers and dietitians. Research at several universities was demonstrating the feasibility of using computer technology for more than cost accounting but it also demonstrated the basic need for managers and dietitians to initiate creative thought and planning to prepare for the changes in the future.

52. ARTIFICIAL LIGHT AND FOOD, Frank D. Borsenik, Ph. D.,

Assistant Professor, School of Hotel, Restaurant and Institutional Management, Michigan State University, East Lansing, Mich. 48823.

The objective of this study was to evaluate sources of light on different food items and combinations of food items. All lamps were rated at 15 watts and 120 volts and included one incandescent plus 10 fluorescent -- 5 degrees of white plus gold, blue, green, red, pink. Eight food items were lighted by these sources of light -- fried ham, roast beef, fried egg, black coffee, green peas, yellow corn, red beets, and mashed potatoes. Five combinations of food items were also lighted by the various sources of light. Each day, four chambers were arranged with different food items or combinations and each was lighted with a selected light source. Judges viewed each of the food chambers and recorded their evaluations according to a scale ranging from 9 to 1 and from "Like extremely" to midpoint of 5, "Neither like or dislike" to "Dislike extremely."

Thirteen tables recorded the preference rankings for the food items and dishes studied. These were integrated in Table XIV and the overall average and ranking of lamps in Table XV. Additional specific research was recommended.

53. ASPECTS OF USING FROZEN PRE-PACKAGED ENTREES IN A COMMERCIAL HOTEL FOOD DEPARTMENT, Vance A. Christian, M.A. Thesis, 1965. School of Hotel Administration Library, Cornell University, Ithaca, N.Y. 14850. Interlibrary loan.

This research was undertaken to answer realistically the opinions revealed by a previous survey that preprepared frozen foods were expensive and did not possess quality acceptable to the hotel guest.

The data obtained was summarized as follows: (1) The cost of food did not increase during the period preprepared entrees were utilized compared with the previous year. Wastes from overproduction and cooking errors were eliminated. (2) The payroll expense was reduced by 4.8%. (3) Service was improved through speedy preparation. (4) The menu was enlarged to include a greater variety of dishes. (5) Every detail of preparation and serving was written down and food preparation employees did not require a high degree of skill. (6) Sales increased. (7) Customer needs and preferences were considered paramount by manager and staff, and complaints were fewer than the previous year.

54. ATTITUDES TOWARD EATING OUT, 1964, J. Walter Thompson Company, for National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

This study--an analysis of married couples' feelings and attitudes about eating out--was added to a preceding review and summary of the published literature on eating out, and these constituted the exploratory phase of a major research project concerning the status of eating out. Taped group discussions were held with 19 married couples divided into five groups of three couples each and a sixth group which included four couples.

All participants enjoyed talking about eating out and did so at great length. The major part of the discussions centered around table service restaurants, with only mentions of cafeterias, smorgasbords and drive-ins. Mentions were made of a great number of different restaurants visited. Choices depended on occasions--celebrating, entertaining, treating children, merely having to eat, change of routine, and so forth--and this related to money spent. These and other categories are detailed in the report.

55. CARPET UNDERLAYS: PERFORMANCE CHARACTERISTICS, Foster D. Snell, Inc., for Institutional Research Council, Inc., 221 W. 57th Street, New York, N.Y. 10019. \$5.

The objective of this research was to provide authoritative documented data on performance characteristics of new and old types of carpet underlay and how these add to carpet wear life.

Eight underlays were examined and tested including: (1) All-hair, 40-ounce; (2) hair and fiber blend, 40-ounce; (3) rubberized hair and fiber; (4) sponge rubber, 1/4-inch flat; (5) foam and fiber; (6) waffled sponge rubber; (7) sponge rubber with synthetics; (8) foam rubber. These were tested for effect on carpet wear life, compressibility and resilience, thermal conductivity,

flammability, frictional resistance, tear resistance, and resistance to rug cleaning chemicals. A special wear-test machine was designed to simulate stresses and motions and to accelerate their wear effects. Test results were presented in chart and descriptive forms.

56. CONVENIENCE SYSTEMS, Roslyn Willett, Fast Food Magazine, April 1967, 10 pages.

This study was conducted to determine how and to what extent food service operators were using frozen prepared foods and other "convenient" food items. Among identified operations were Walgreen's, Stouffer's Kaiser Foundation Hospitals, and Automatic Retailers of America. Main points from other studies made by the author were included along with a typical plan for a study by a food service company to evaluate the use of convenient foods.

The results were summarized as follows: (1) Every organization making a success of convenience foods devoted an immense amount of effort and study to the problem; (2) a menu must be made from both convenience and "convenient" foods; (3) operations must be recast to gain savings from use of less skilled people, from work scheduling, and from rationalized use of equipment and space; (4) although information is accumulating, top management must first answer basic questions about goals and markets to be reached before embarking on setting up a system.

57. DISCUSSION ON USE OF CONVENIENCE FOODS, 1967, Market Forge Company, Everett, Mass. 02149.

The principal reason given for getting together was that as food manufacturers, equipment manufacturers, food facilities designers, and distributors--all could benefit through an exchange of experiences, problems, and gains in preparing and using convenience foods. A total of 25 executives participated.

The problems, values, and needs of using convenience foods varied by volume of food service, type of feeding operation, acceptable menus, and other factors. The greatest problems revolved around quality control and satisfying consumer needs. Many specific experiences were presented in detail.

58. FLAVOR RESEARCH AND FOOD ACCEPTANCE, 1961, Robert L. Swaine, Arthur D. Little, Inc., Cambridge, Mass. 02140.

Because flavor has always been a major factor in the acceptance and repeat purchases of foods and beverages, this project was designed to summarize the history of the development of scientific methods for evaluating the potential consumer acceptance of recipes, formulas, and food products. Emphasis was placed on the extent to which technological know-how had transcended the capacity of the artist to produce flavors with consumer appeal.

In addition to outlining the complexities of flavor evaluation, the report presented how the principal testing procedures were conducted in various quality control programs. Laboratory flavor testing was also presented as it related to

development of new products, in taste panels training operations, in process research, and in comparisons of synthetic and natural flavors. Methods of consumer product testing were also outlined. The book, "Flavor Research and Food Acceptance," sponsored by Arthur D. Little, Inc., Reinhold Pub. Co., 1958, was recommended for more comprehensive information.

59. FOOD MERCHANDISING (PANEL). Phil Campbell, Acoma Foods, Inc., Marjorie S. Arkwright, Director of Food Service, The Ilbini Union; Bill Knapp, Knapp's Restaurant; Michael Hurts, Schuler's Restaurant. Reports presented at 6th Conference, April 1962, Society For Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610, 3 pages. Xerox copy \$3.10.

The objective of this four-part presentation was to outline the experiences of one food manufacturer and three food service operators in researching the factors that enter into food merchandising.

Marjorie S. Arkwright outlined a new approach to food merchandising that grew out of handling problems related to increased enrollment at the University of Illinois, changing student attitudes, automation, rapid changes in technology, severe competition, and spiralling costs. Her outline included: (1) Quality control; (2) food presentation, (3) menus, (4) educational programs, (5) merchandising ideas. The three other papers covered the food merchandising programs followed by their respective companies.

60. FOOD MERCHANDISING IDEAS FOR PROFIT IN '64, Charles D. Corwin, Jr. Hospitality Education Program, Florida State University, Tallahassee, Fla. 32306.

The objective of this paper was to review the successful experiences of food service operators in merchandising special menus and decorations on holidays and days of celebration.

Included in the list were Chinese New Year, Valentine's Day, Washington's Birthday, St. Patrick's Day, First Day of Spring, Easter, Mother's Day, Father's Day, Independence Day, Labor Day, Halloween, Thanksgiving, Christmas, and New Year's Eve.

61. FROZEN PREPARED FOODS, Edwin S. Weber. The Cornell Hotel and Restaurant Administration Quarterly, Vol. 3, No. 21 August, 1962, 6 pages.

This case study reports on the use of convenience foods at the Hotel du Pont, Wilmington, Del. Twenty-five foods were selected and tested on the basis of: (1) meeting the hotel's quality standards; (2) presenting some labor savings; (3) being suitable for the hotel's type of service.

Presentation was made of test results in one of the hotel's dining rooms including menu acceptance, labor costs, and food costs. The author concluded by saying that "these foods will enable use to offer our customers better

quality and more carefully prepared foods, and at the same time, permit us to control costs to the point where we can maintain high-quality service at a competitive price."

62. GENERAL GOODS EATING OUT INDEX AND CONSUMER ATTITUDES

SURVEY, 1960. Prepared in cooperation with National Restaurant Association, Sponsored by General Goods Corporation, Institutional Food Service Division, White Plains, N.Y. 10602.

The primary objective of this study was to establish an index of eating out and patterns for various population groups which would serve as a benchmark for changes that could occur in future. A second objective was to develop information about habits and attitudes, and to provide insights into restaurant-customer relationships. All information was obtained through interviews with nationwide samples of men and women 18 years of age and over during January and February 1960. Tabulations were based on a total of 2,798 cases.

Of the people interviewed, 43% went out to eat at least one meal during the preceding 7 days -- 5% one or more breakfasts, 30% noon meals, 25% evening meals. The average number of meals eaten out by these persons during her previous week was 3.4. The report not only analyzed these findings in detail, but also those concerning: (1) Families eating out together; (2) type of eating place patronized; (3) reasons for eating out; (4) per capita expenditure for meals; (5) estimated family expenditure; (6) attitudes toward eating out; (7) deterrents to eating out; (8) family member who suggests eating out; (9) attitudes toward restaurants; (10) credit and eating out; (11) alcoholic beverages and eating out.

63. HOW DOES IT TASTE? John H. Mriarty, Arthur D. Little, Inc.

Report presented at 9th Conference, Nov. 1963, Society for Advancement of Food Service Research, 1530 No Lake Shore Dr., Chicago, Ill. 60610, 19 pages. Xerox copy \$1.90.

Because the pressures of conducting business have caused food service operators to overlook the importance of good flavor in food products to be served, this study explored the problems involved and outlined methods for solving them. Flavor was rated as one of the primary operational requirements to be satisfied for the ultimate success of all food service ventures.

The Flavor Profile Method for evaluating food flavor was outlined and its application illustrated with numerous specific examples. In summary the important factors contributing to acceptable and well-flavored foods consisted of an early impact of appropriate flavor, a pleasant mouth sensation, full body of lightly blended flavor, and a rapid development of this full flavor in the mouth. The importance of appearances and temperatures were also outlined, along with techniques for controlling flavor, appearance and temperature of each food product. Appended to this report is a list of 84 pages on food and flavor available from Arthur D. Little, Inc.

64. MANAGING MENUS, Bea Sandler. Fast Food, May, June, July, August, September, and October issues, 1968. 20 pages.

Based on research and experience, the objective of this presentation was to outline how the 10 most common mistakes in menu writing and management could be avoided. These mistakes were: (1) You don't know your customers; (2) you copy your competitor's menu; (3) you don't know what you're selling; (4) you hang on to slow volume items; (5) your food costing is inaccurate; (6) you build in high labor cost; (7) you don't know how to buy; (8) your menu only works part time; (9) you list when you should sell; (10) you settle for sameness.

Losses in the food service business were found to occur for two basic reasons: Lack of planning and lack of control. The management of menus was developed around 10 key items--planning, precontrol, precosting, purchasing, placement, production plan, preparation, presentation, program for leftovers, profit picture.

65. MARKET RESEARCHING NEW PRODUCTS, Market Potentials Research Branch, USDA, in Food Service Research Digest, Autumn 1962, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

The objective of this report was to explain how and why the U.S. Department of Agriculture used retail stores, restaurants, schools, bakers, food manufacturers, and other types of outlets as laboratories to determine the commercial feasibility and acceptance of new food products. How food service operators and retailers benefit was also presented.

Two research formats were used: (1) Market potentials studies to determine the volume capabilities of a particular agricultural commodity or group of commodities; (2) market and/or product testing in collaboration with the Utilization Laboratories of the USDA. Development of new products gave the entire food industry liveliness and versatility. Market research gave food service operators tested products whose sales qualities, workability, and acceptance were thoroughly tried out in the market place and the kitchen.

66. MARKETING -- THE KEY TO SUCCESSFUL MANAGEMENT, William Morton, The Cornell Hotel and Restaurant Administration Quarterly, Vol. 6, No. 3, November 1965, 5 pages.

This study was based on a paper written by Prof. Neil I. Borden, Harvard Business School. It stresses the need for management in the hospitality industry to adopt a total marketing orientation rather than being simply sales and operations minded.

Quoting Professor Borden, he writes that "success as a marketer depends on a business man's understanding of the courses of the market that bear upon any product or product line and his skill in devising a 'mix' of marketing methods that conform and adjust to these courses in a way to produce a satisfactory net profit future." He then develops the marketing mix in relation to the hospitality

industry: (1) Merchandising or product planning; (2) pricing; (3) branding, either individual or chain affiliation; (4) channels of distribution; (5) personal selling; (6) advertising; (7) promotion; (8) packaging; (9) display; (10) serving; (11) handling; (12) fact finding and analysis, or market research.

67. MEDICAL DIETETIC STUDENTS PLAN MANUS WITH COMPUTER ASSISTANCE,
John P. Casbergue, Hospitals, June 16, 1966.

The objective of this article was to review the concepts and methodology of computer-assisted menu planning as introduced in an undergraduate course in the Division of Medical Dietetics at Ohio State University.

Students gained on-line menu planning experience by means of a computer terminal in the Columbus, Ohio, classroom linked to a computer located 1,200 miles away in New Orleans at the Tulane University center. The man-machine process was not only described as a valuable one in planning menus and providing nutrient information for dietetic decision making but also demonstrated to students and dietitians the concepts of linear programming and computer technology. It illustrated how educational programs and food service systems could utilize computers from remote locations for their purposes.

68. MENU FOR TOMORROW, Richard D. Mathews, John P. Nielsen,
Stanford Research Institute. Food Services Research Digest,
Winter, 1961, National Restaurant Association, 1530 N. Lake Shore Drive,
Chicago, Ill. 60610.

The objective of this study was to explore the advances being made in the processing of food for preservation, transportation and distribution, edibility and digestibility, and added nutrition. Because freeze-drying, sonic and microwave energy techniques offer possibilities for lowering food costs, these potentialities were explored at length.

The conclusion was that the future will bring a basic understanding of the psychology of appetite and the physiology of digestion and the interaction between the two. Conditioned response to shape, color, and texture of foods should be equally controllable in the future. With the separation of all these factors, their recombination into a limitless variety, will be the essence of man's menu of tomorrow. This will be made possible by the new methods of food handling and processing.

69. MENU PLANNING BY COMPUTER: THE RANDOM APPROACH,
Eleanor F. Eckstein, Journal of the American
Dietetic Association, December 1967.

In this article, the author describes a method of planning menus with computer assistance, using a random approach, and simulating the decision-making process of the dietitian or manager.

This random approach meets criteria of palatability (color, texture, shape), variety, calories, acceptability, and raw food costs. This method differs from

the linear programming approach and offers another perspective to the use of computer assistance in planning menus.

70. MODERN CONCEPTS OF FOOD AND MATERIALS HANDLING AND FOOD SYSTEMS DESIGN TRENDS, Katherine E. Flack, Director, Nutrition Services, State of New York, Department of Mental Hygiene. Report presented at 16th Conference, April 1967, Society for Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610, 25 pages. Xerox copy \$2.50.

This research project was conducted around the systems concept which envisioned three different levels of planning: (1) The master planning council of central office specialists; (2) planning for project and facilitating systems provided by the institutions nutrition service staff; (3) planning of operations committee for the operation of each facilitating system by the food production and service staff of each operating unit.

The basic objective was to assist in the rehabilitation of each patient through aroused interest and acceptance of food, through improving his nutritional status and teaching him good eating habits. The system designed to accomplish this at lowest costs with the aid of computers began when ordering and receiving supplies, and carried through every phase of production and service.

71. NATIONAL POLL OF PATRON PREFERENCES, PREJUDICES AND TRENDS, 1967, Gallup Survey for Food Service Magazine, P.O. Box 1648, Madison, Wis. 53701, 10 sections, \$1.

In order to determine preferences and prejudices regarding foods and restaurant services, detailed questions and check lists were prepared and administered to approximately 1,600 persons located in 4 regions of the country. Answers to each of 10 questions are tabulated and analyzed in reprints of reports which first appeared in 10 issues of Food Service Magazine.

Answers in regard to operations are illustrated by replies to the question: "Assuming the food is satisfactory, what improvements would you make in the restaurants you patronize..." which, in summary form, were service 78%, cleanliness 64%; atmosphere 35%; plus 6 lesser factors. In regard to favorite entrees, items were ranked thus: Steak 28%; chicken 20%; roast beef 19%; seafood 13%; with seafood growing more popular among the younger generation. Preferences for breakfast, appetizers, vegetables, desserts, snacks, and snack beverages are also reported.

72. "READY" OR NOT? PURDUE TESTED BOTH METHODS, Dr. Mary E. Queen, College and University Business, Vol. 42, No. 3, March 1967.

The objectives of these two pilot studies were to: (1) Evaluate student acceptance and determine direct food and labor costs of specific ready foods as compared to similar traditionally prepared foods; (2) test an evaluating system for measuring acceptance under conditions in which the relationship of total use of ready prepared foods in a menu pattern was compared with the total use of traditionally prepared foods.

The difference in average scores given by consumers to the two types of menu items was relatively small; therefore, all menu items tested were considered within a range of acceptability. Use of ready foods saved more than 50 percent of the total time required for preparation of the traditional menu. The data indicated that the saving in labor cost of the ready foods menu did not totally offset the difference between the lower original food cost of the traditionally prepared menu and that of the ready food menu.

73. SELECTIVE MENU PLANNING BY COMPUTER, Ronald L. Gue, Ph.D., Director, Research Division, Center for Health and Hospital Adm., University of Florida. Report published in Proceedings of 13th Conference, October 1965, Society for Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610, 14 pages. Xerox copy \$1.40.

The objective of this report was to detail the research under way and aimed at the use of mathematical programming and the digital computer in menu planning that was centered at Tulane University (nonselective menus) and at the University of Florida (selective menus). Both projects were concerned with satisfying nutrient requirements and patient preferences at minimum costs to the hospitals.

Methods of solving the nonselective menu planning problem were developed by the Tulane group through adoption of standard recipes and menu cycles of various lengths. Computer programs were built around these factors. The selective menu planning problem at Florida was resolved by making certain that each patient obtains at least a minimum (or maximum) amount of nutrients each day and enjoys a reasonable degree of variety.

74. STANDARD BRANDS CONSUMER PANEL REPORT ON DINING OUT HABITS AND ATTITUDES, 1961. In cooperation with National Restaurant Association, Chase & Sanborn Division, Standard Brands, Inc., 625 Madison Avenue, New York, N.Y. 10022.

This research was conducted through the J. Walter Thompson Consumer Panel to learn what might induce people to decide to eat away from home more of those meals which they could freely choose to eat anywhere they liked. The diary records and questionnaires sent to the panel were designed to (1) reveal why people did, or did not, eat meals away from home; (2) identify the factors which induced them to eat out; (3) show the features of eating places selected; (4) reveal what they thought about eating out; (5) record what they actually did during the month in which the study was made.

In presenting the findings, the statistics were organized to point out the differences between families who ate out, and those who did not, so that the best areas for growth potential could be identified. The panel families were classified in several categories so that specific groups of families could be traced throughout the report. The charts (150) were divided under 12 subject sections.

75. SUCCESS FORMULA: BREAKTHROUGH AT SOUTHERN METHODIST UNIVERSITY,
Volume Feeding Management, October 1966, 29 pages.

The objective of this presentation was to research the planning and inter-relationships among people, food, equipment, and ideas that entered into feeding more than half of the 4,200 undergraduate students regularly and catering special affairs for more than 110,000 people during the school year.

Food service was regarded from the outset as an opportunity to impress upon the students some of the values of developing their food tastes. This was approved by the administrative officers. The staff included around 120 people, plus 20 to 30 trained people, four dietitians, and four supervisors. The menu was based on an 8-week cycle. New dishes were offered first at catered affairs, and if reaction was favorable, they were offered as a choice on the line. Separate instructions were created for dietitians and supervisors and for regular employees and student waiters. Every phase of the operation was planned and supervised consistently with customer satisfaction in mind.

76. SURVEY ON EATING OUT, 1962, for National Restaurant Association,
Sponsored by General Foods Corporation, Institutional Food Service
Division, White Plains, N.Y. 10602.

The primary objective of this study was to develop information to help guide the National Restaurant Association and its members in their efforts to promote increased patronage of eating establishments. A second objective was to update the 1960 study on incidence and frequency of eating out, patterns, and attitudes. Interviewing began October 3, 1962, and was completed November 6. October was an above average restaurant month. Tabulations were based on 1,901 interviews.

A higher percentage of persons interviewed (49% compared with 43% in 1960) went out to eat at least once during the preceding week--6% one or more breakfasts, 31% noon meals, 29% evening meals. In husband and wife families, 30% of all meals eaten out by either husband or wife were eaten out together, 70% alone. About two-thirds of evening meals eaten out reflected voluntary decisions. Of all who dined out, 85% really enjoyed themselves, and 49 percent said they would like to dine out more often. Of parents with children under 12, 55 percent of those interviewed said their children asked to be taken out to eat. These and all other related data are analyzed in detail.

77. THE IMPORTANCE OF FLAVOR IN READY FOODS, Anne J. Neilson,
Arthur D. Little, Inc. Report presented at 15th Conference,
October 1966, Society For Advancement of Food Service Research,
1530 N. Lake Shore Drive, Chicago, Ill. 60610. 12 pages,
Xerox copy \$1.20.

The objective of this study was to summarize the research used in evaluating flavors and the results obtained by (1) difference tests; (2) ranking methods; (3) rating or scoring methods; (4) analytical or descriptive methods. Flavor was defined as the integration of the responses of three senses--the sense of taste, which signals the presence of chemicals that register as sweet, salty,

sour, or bitter; the sense of feeling, which announces the presence of chemical stimuli that may be astringent, mouth-coating, or cooling; and the sense of smell, which responds to volatile chemicals such as sulphur compounds in onion and garlic, the aldehydes and ketones and esters of fruits, and the complexity of volatiles of baked bread and brewed coffee.

The resulting flavor profile was constructed on five criteria and presented as the only method found successful in evaluating good flavor.

78. THE MAN WHO DIDN'T COME TO DINNER - SOME WAYS TO FIND OUT WHY, Business and Technical Advisory Service No. 5, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610. 20¢.

This bulletin was designed to study the reasons why potential customers do not patronize specific restaurants and then to create detailed methods by which individual operators could research their own places of business and arrive at conclusions for improvement.

The findings were incorporated in the program of diagnosis and treatment under these eight basic questions: (1) Who are my customers? (2) Is my menu making friends ... and money? (3) Is hospitality still a very real ingredient in my total operation? (4) Am I still achieving the atmosphere I want? (5) What (and how) is my competition doing? (6) Am I reaching my full potential, considering present resources? (7) Am I doing my share in the community? (8) Do I fully understand my goal and my ambitions? Recommendation was made that the operator decide what he wanted most and then decide on the steps to be taken to transform goals into realities.

79. THE SELECTION AND MAINTENANCE OF COMMERCIAL CARPET, Bernard Berkeley, and Cyril I. Kimball, The Cornell Hotel and Restaurant Administration Quarterly, Vol. 3, February 1963, 52 pages.

This study, sponsored by the American Hotel and Motel Association, distills both facts and opinions derived from the practical experience of expert carpet buyers, the technical knowledge of carpet manufacturers and the specialized background of a firm in the field of cleaning and maintenance.

The first part of the manual deals with the construction and selection of carpets. After covering the common construction components of a carpet, presentation is made of the types of carpets, and the myriad of fibers available for carpet use. Explanation is also made of how to plan carpet selection and develop specification guides. Detailed explanation is also made of various methods used for cleaning carpets either on a daily, seasonal, or other periodic basis, including handling, shading, mildew, static, and spotting. A 6-page glossary of common carpet terminology is included.

80. THE USE OF POULTRY IN FOOD SERVICE, Lendal H. Kotschevar, Ph. D., for National Broiler Council, Food Service Research Digest, Spring 1964. National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

The objective of this study was to ascertain sales and merchandising characteristics of broiler chickens in the food service industry. Menus from 1,075 operations were selected for analysis of what items appeared on them and how frequently. Percent of operations in the sample were restaurants 63%, hotels 15%, luncheonettes 4%, stores 4%, motels 4%, drive-ins 3%, cafeterias 2%, schools 2%, clubs, hospitals, airlines, and taverns, each 1%. In all, 20,946 items were classified.

The results indicated that a significant difference existed in the item an individual selected when he had a free choice of a number of entrees. Chicken was stable against competition from price changes but not against merchandising. The mark-up on chicken was higher than average.

81. TIE-IN IDEAS TO BUILD YOUR SALES, 1967. IFMA Member Service with National Restaurant Association, 24 pages. Institutional Foodservice Manufacturers Association, One East Wacker Drive, Chicago, Ill. 60601.

The purpose of this study and the resulting merchandising booklet was to help institutional foodservice manufacturers, distributors and brokers develop promotional ideas by assembling and showing examples of what others had done to tie in more closely with national industry and association campaigns, as well as holidays, to increase sales for restaurant operators.

Generously illustrated examples (more than 50 in number) were given of promotions developed and carried out by manufacturers, operators, and associations. Explanatory notes of each promotion were included. A calendar of "Opportunities for Foodservice Promotions Throughout The Year" was also presented.

82. USE AND WEAR TESTS OF MATERIAL SURFACES AND FINISHES, National Sanitation Foundation, Food Service Research Digest, Winter, 1963-64, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

The purpose of this project was to develop use and wear tests or exposures to simulate actual usage of food service equipment and dinnerware. The overall concept consisted of three-phases: (1) Determination of a reliable and suitable means for the evaluation of the cleanability of materials and surfaces; (2) development of practical and reproducible simulated use and wear tests; (3) establishment of public health standards, or limits of cleanability, required for various use environments.

The end result of this project from the food service operator's viewpoint was envisaged as identification of types of dishware and of materials or finishes used on counter tops, worktables, and other surfaces requiring constant

cleaning which would be most satisfactory for food services establishments. Other important factors considered were durability and economy.

83. USE OF SPICES AND FLAVORS IN THE CATERING INDUSTRY,
Otto Schlecker, Consulting Chef, The Griffith Laboratories Inc.
Report presented at 8th Conference, May 1963, Society for
Advancement of Food Service Research, 1530 N. Lake Shore Dr.,
Chicago, Ill. 60610. 18 pages - Xerox copy \$1.80.

The objective of this report was to trace the development of the use of spices and seasonings in various areas of the world and then to examine in detail how these experiences influenced Americans when eating at home or in restaurants and when consuming foods produced by manufacturers and processors. Methods of treating spices and seasonings and of producing flavorings were also researched.

While the cooks and chefs of the past and the present followed the traditional uses of spices and seasonings, as well as their own preferences and tastes, the manufacturers of processed foods (canned, dried, frozen, concentrated, etc.) were forced to produce and distribute products that satisfied the needs of purchasers. Food service operators quickly learned to spice and season such foods to give them individuality. Specific examples and illustrations were provided throughout the report.

84. WHAT MAKES A DIFFERENCE IN IDENTICAL MENUS, College and
University Business, Vol. 41, No. 5, November 1966.

This study was conducted at Kansas State University to determine why, with identical menus, standardized recipes, food from the same carload lots, and similar service, one residence hall was plagued with complaints and incidents while other students were contented with the food. A questionnaire was developed to ascertain possible relationships between residence hall food and the reactions of students to statements concerning the dietitian and the social director.

Data indicated that significant relationships did exist between reactions to food and (1) how well dietitians were known by respondents; (2) how often dietitians were seen by students; (3) dietitians' desire to please residents; (4) their interest in students as persons. No such relations were found between the students' food responses and how well social directors were known and accepted.

Additional Reference Sources in this Report Pertaining to Merchandising

In addition to foregoing abstracts, additional information pertaining to the subject may be found in the following abstracts which are presented elsewhere in this report:

<u>Abstract No.</u>	<u>Publication Title</u>
5	A Report on Progress in the Food Service Industry
6	Alert Hosts in the Marketing Age
19	1966 Index of Restaurant Buying Power
23	Reconnaissance Report: Consumer Expenditures 1966 - Away From Home Food and Housing
24	Restaurant Growth Index 1968
25	Review and Summary of the Published Literature on Eating Out, 1964
29	The Commercial Lodging Market
30	The Drive-In Market 1965
31	The Economicsts' View of the Food Service Industry, 1966
40	The Restaurant Business: Marketing Makes the Menu
42	The U.S. Eating-Out Market
107	Success Formula Food Study
118	Commercially Pre-Prepared Food Entrees
122	Convenience Foods and The Food Service Market
139	How to Succeed In Losing Quality Without Really Trying
140	Ideas are Food For Thought In Food Service Planning
144	Labor Utilization and Operating Practices in Commercial Cafeterias
149	Parking Lots - Self-Service
163	The Sub-Standard Washroom - Hidden Menace to Successful Restaurant Operation
164	The Wonderful World of Barbecuing

Abstract No.Publication Title

- | | |
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| 170 | Working With Convenience Foods to
Build a Cost-Effective Food Service
Program |
| 212 | A Study of the Teaching Procedures
Used in A Quantity Food Preparation
Course |
| 217 | Food Service Industry Training Programs
and Facilities |

PURCHASING

The term purchasing as used in this report is defined as the act of acquiring food and food products by the food service operators from manufacturers, brokers, and wholesale distributors.

There is a growing realization that food service is a total industry rather than a fragmented one among manufacturer, grower, broker, distributor, and operator. Collaboration between these groups has not developed rapidly enough to keep some large operators from building plants to prepare, freeze, and/or can their own products for use by their various units. Some of these food service operator/processors are also distributing their products through retail stores. Here their products have found considerable popularity because their quality often results in greater degrees of customer satisfaction than price-competitive products of other manufacturers.

An operator of a large and famous hotel told us, "Our chef--we called him Prince--was a genius. He died 2 years ago. His assistant was appointed to take his place but gradually quality and service began to drift downward. Also we began to lose staff members to our competitors. In desperation, we started experimenting with convenience foods, as you call them, concentrating on those reputed to be of the finest quality. We did this for 6 months but in all that time we found only a few that met our specifications. These reconstitute beautifully and our patrons even compliment us. In another 12 months most of what we serve will be prepared this way, even our pies, cakes, and pastries."

While communication between manufacturers and operators has been increasing, the progress has not been rapid enough to result in maximum transformations in policies and practices to meet rapidly changing conditions. Several restaurant owners commented that food manufacturers appear to be making what they believe can be sold rather than what food service operators actually need. They also criticize brokers and most distributors for not even making the effort to learn their problems and needs. Some progress is being made by a few distributors and the food services industry hopes subjectively that this can be accelerated into a welcome and amiable epidemic.

In regard to purchasing, old bargaining methods are proving much too costly for enlightened and budget-minded operators. Those using computers, or having access to them, have replacement orders communicated automatically. Other operators are dealing through fewer suppliers and consider them "members of the team." Operators told us that the more rapidly these trends can be accelerated, the more effective will their relationships become with suppliers.

Manuals of standards for various products and materials are largely out of date. Up-to-the-minute standards should be modified constantly as products and processes are changed. This is especially important for preprepared and convenience foods now coming into wide use. With kitchen skills diminishing, suggestions have been made that specifications and simple, understandable preparation instructions be printed on every package label. Complete understanding of operating problems by the representatives of manufacturers, brokers, and distributors will also help kitchen personnel to prepare and serve these products.

Every vendor works with a number of customers. He earns a great deal about problems and successes from each one of them. Such findings can be of value to all customers if communicated in group sessions or through the observations and suggestions of contact men.

Before maximum benefits can be achieved in welding manufacturers, brokers, distributors, and operators into collaborating groups, determinations must be made of the values, strengths, and weaknesses inherent in such programs and what must be done to enable them to work together. Manufacturers and processors, especially, should do more realistic research into the present and future needs of food service operators and how they can modify or develop their products to meet these needs.

Research Gaps

It is recommended that the following research projects be inaugurated in order of priority:

1. Design and conduct research to determine how growers, manufacturers, brokers, distributors, association groups, and food service operators can collaborate for their mutual benefit. Optimum order sizes, availability and utilization of storage facilities, shelf-life, and similar factors should be evaluated.

2. Research should also be conducted into the adequacy of specifications and standards in view of the increasing numbers of preprepared, preprocessed, ready, and convenience foods. Much experimenting and testing time may be saved if communication can be specific and commonly understandable. With such information at hand, higher standards of foods might be used at the same or lower total costs.

3. Present meetings and group programs should be evaluated for their effectiveness. Interviews with operators added up to the consensus that hard-nosed problem-solving seminars were needed most during these difficult days of transition. Studies of successful gatherings will aid in formulating program

objectives and procedures for the benefit of manufacturers and distributors, as well as operators.

Purchasing Abstracts

85. A STUDY OF MANUFACTURER/WHOLESALE RELATIONS IN THE VOLUME FEEDING MARKET, 1964, Volume Feeding Management, 205 East 42nd Street, New York, N.Y. 10017.

The purpose of this study was to investigate the working relationships of manufacturers and wholesalers, unearth the selling problems of each, and find areas of mutual concern. Separate questionnaires were mailed; as far as possible, comparable questions were asked of each group. A similar study was conducted 5 years before; thus in several instances the answers given could be compared.

The most important factor was size, with \$64 million being the average sales of manufacturers, institutional wholesalers \$2 million, grocery wholesalers doing some institutional business \$11 million. A majority of the wholesalers expected the institutional market to increase faster than the retail market. Both manufacturers and wholesalers reported that profits from sales to the food service market were greater. Manufacturers considered recipes most important in promotion; wholesalers considered four in this order--product samples, descriptive product literature, suggested uses, and serving cost charts. Numerous other sales factors were detailed.

86. A STUDY: THE INSTITUTIONAL DISTRIBUTION MARKET, 1964, Institutional Distribution, 630 Third Avenue, New York, N.Y. 10017.

This study was designed to provide information for those companies and individuals who had a primary interest in serving the restaurant and institutional market. Preparation included extensive in-depth interviews with a broad range of representative food service operators, institutional food distributors, food brokers, and manufacturers of food and supplies.

There was general agreement that about 90% of the food purchased by all away-from-home eating places flowed through all types of food distributors. Meats and poultry represented about 30% of all foods purchased, milk and dairy products 15%, fresh fruits and vegetables 12%, bakery products 7%. These products were distributed mainly through specialized wholesalers. The general institutional distributors was becoming more important to those he served because with kitchen and preparation costs rising, operators were becoming more interested in preprocessed and finished foods, many of which they only needed to heat and serve. Numerous recommendations were made for improving sales and relations between manufacturers, distributors, and operators.

87. ARMY FEEDING SYSTEMS, Herbert A. Hollender, Food Division, U.S. Army Natick Laboratories. Report presented at 9th Conference, November 1963, Society For Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610. 8 pages -- Xerox copy 80¢.

Because present day weapons dictate mobility, speed, and dispersion for military strategy, scientists in the Food Division of the U.S. Army embarked early on a program of research to develop convenience foods that could be easily and quickly prepared and keep soldiers and officers physically and mentally fit. Major emphasis was placed on freeze-dehydration because it was a process that produced a stable food, highly nutritious, with its original taste and texture largely untouched, and could be stored for months without refrigeration. Air and vacuum-dehydration methods were also perfected for preparing appropriate foods.

Originally, a ration system was based on the Quick-Serve Meal. Three definitive field tests were conducted with an array of 21 meals containing 1,200 calories each, (7 breakfasts, dinners and suppers) packaged with plates, cups, etc., in modules for 6 to 25 men. Only about 10% of the original food weight was retained. All that the soldier needed was water and a source of heat. Following this, fully cooked products, fruits, and other goods were prepared. Many of these products were adopted commercially.

88. BUYING, HANDLING AND USING FRESH FRUITS, NRA Food Service Educational Institute, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610. 50¢.

The purpose of this bulletin was to provide information that could lead to improvements in each phase of dealing with fresh fruits from purchase until ready to be prepared. The material was researched and developed cooperatively with the United Fresh Fruit and Vegetable Association.

Included in this bulletin were descriptions of 33 fruits normally usable in restaurants, giving information about sources of supply, availability, uses, buying considerations, grades, varieties, containers, suitable storage conditions, and holding temperatures. The charts were arranged alphabetically.

89. COMPUTER PROVIDES INSTANT UPDATING OF PERPETUAL INVENTORY AT MISSOURI MEDICAL CENTER, Hospitals, April 1, 1966.

This article describes the computer-assisted food inventory and cost control program developed at the University of Missouri Medical Center.

The automated system provides for (1) perpetual inventory; (2) issue controls and records; (3) food procurement information; (4) daily and monthly reports on food issues and food costs; (5) recommended amounts to purchase. Methods of coding or numbering stock items are also provided. Reference is made to future work in nutrition data processing and computer-assisted menu planning.

90. COMPUTER RECIPES IN QUANTITY PRODUCTION,
Mary R. DeMarco, Sandra L. Mann, and
Helmi A. Mason, Hospitals, April 16, 1967, 6 pages.

The objective of this study at Cleveland Metropolitan General Hospital was to use the computer as a tool to alleviate the need for making repetitive judgments in producing menu items according to a fixed time schedule. The entire project emphasized the control of quality and quantity of food production.

The computer "print-out" was restricted to pertinent information that was used by the cooks. This consisted of the recipe formula in the amounts required and the time of production. As the chronological time of production was listed, the food production directions to occur within that time zone were simultaneously printed. All recipes included in the project were retested by a dietitian in the experimental kitchen in 50-portion amounts and reevaluated for quality.

91. COMPUTERIZED QUANTITY RECIPE ADJUSTMENTS AND CONSOLIDATED
FOOD ORDERING FOR A HOSPITAL FOOD SERVICE PRODUCTION SECTION,
Jane F. Sager, MS. Thesis, 1966, University of Wisconsin,
Madison, Wis. 53706. Interlibrary loan.

The purpose of this research was to develop a computer-assisted method for mechanically compiling and summarizing standardized recipe data necessary for quality and quantity control and to determine the feasibility of recipe expansion on contraction and food ordering for regular and modified diets.

The programming provided the capability for converting decimal figures to more usable and familiar units of measurements. Recipe ingredients were listed with amounts needed broken down according to order of handling during regular and modified diet preparation. Data requirements included coded standardized recipes, census figures, and food-type categories utilizing individual ingredients.

92. CONVENIENCE FOODS, Volume Feeding Management,
October 1968, 24 pages.

The objective of this study was to assemble current data to aid food service operators in 6 categories in evaluating the potential of these items for their specific operations. The individual categories were (1) Restaurants; (2) Hospitals/Institutions; (3) Schools/Colleges/Camps; (4) Hotels/Motels/Clubs; (5) Employee Feeding; (6) Caterers. Questionnaires were sent out on a random basis and completed by a cross section of the industry.

The editors of the report stated: "It's safe to say that no single subject commands as much interest, as much discussion, as much thought, and as much testing and tasting as Convenience Foods." More than 50 foods were reported under the breakdowns of use: (1) Regularly; (2) Occasionally; (3) Never; (4) Intend to Test. Answers were also given to how much storage space was devoted to fresh, refrigerated, and frozen foods; also whether convenience foods were bought in single- or multiple-portion packages; how they were cooked, reheated, or held; and what equipment was employed for this.

93. DETERMINING COSTS OF SERVICING WHOLESALE INSTITUTIONAL GROCERY ORDERS, 1966, Agricultural Research Service, U.S. Department of Agriculture, Marketing Research Report No. 752.

This study was made to develop a method of determining costs of servicing various sizes of orders, so that this servicing cost could be related to the selling price of the order. Actual costs of servicing orders, by order size, were determined in three firms that represented small-, medium-, and large-volume wholesalers.

The data showed that, although costs varied in the three firms because of differences in wage rates, efficiency, building, and other costs, servicing cost was highest for small orders, decreasing rapidly as the size of the order increased up to orders for 30 cases and less rapidly up to orders of 50 cases. The costs of delivery also constituted a major part of total servicing costs for small orders. Sales costs were charged to each case equally since all salesmen were on a commission basis. Pricing by order size was advantageous to the wholesaler because selling prices reflected actual distribution costs. A method of pricing by order size was illustrated.

94. EARNING FULL VALUE IN PURCHASING, Mickey Houston, The Cornell Hotel and Restaurant Administration Quarterly, Vol. 1, May 1960, 15 pages.

This study resulted in a handbook with guidelines in the purchasing of fruits and vegetables. Three key areas in purchasing were presented--specifications, competitive bidding and receiving--setting forth suggestions and recommendations. Included in the buying guide were specifications and tips for handling and storage.

95. EXPENDITURES FOR PROCESSED FOODS BY EMPLOYEE FOOD SERVICES IN MANUFACTURING PLANTS, 1961, Agricultural Marketing Service, Marketing Economics Division, U.S. Department of Agriculture, Marketing Research Report No. 458.

Although this study was conducted among operators of employee food services in manufacturing plants, there was general value in the fact that 60% of the money spent went for foods that needed little additional preparation in institutional kitchens.

An examination of comparative costs of food showed that the more highly processed foods were not necessarily the most expensive. Nor was price always the dominant factor in purchase decisions. Also important were savings in time, preparations and labor costs.

96. MEAT BUYER'S GUIDE TO STANDARDIZED MEAT CUTS, 1967,
National Association of Meat Purveyors,
29 So. LaSalle Street, Chicago, Ill. 60603 \$10.

This guide was researched and compiled to standardize the terminology and descriptions of various customarily used cuts of beef, lamb, veal and pork, and to eliminate confusion and misunderstanding in communication between packers, processors, purveyors, and food service operators. The original edition required 4 years of effort on the part of the Association's Meat Cuts Standardization Committee in collaboration with the United States Department of Agriculture and operators in various segments of the food service industry.

The manual made it possible for operators in the food service industry and their purveyors in all geographical areas to identify the specifications of various meat cuts with precision and to communicate them with accuracy. It has brought about equitable competition in addition to exact communication, in the entire industry, according to food service and association officials.

97. NEW DEVELOPMENTS IN REFRIGERATION, Donald K. Tressler,
The Cornell Hotel and Restaurant Administration Quarterly,
Vol. 3, No. 1, May 1962, 7 pages.

The objective of this study was to examine various frozen foods available on the market--principally potatoes, meat and poultry pies, fish items, and soups. Mention was also made of complete meals packaged on aluminum or plastic trays, and the numerous bakery products frozen to retard staling.

The newer techniques were then analyzed--freeze drying, dehydrofreezing, use of liquid nitrogen--and feasibility was examined for providing quality products. Included were the results of studies undertaken by the U.S. Department of Agriculture to show the relative stabilities of frozen foods at various temperatures.

98. POLICIES AND PRACTICES OF SOME LEADING INSTITUTIONAL
WHOLESALE GROCERS, 1959, Agricultural Marketing Service,
Marketing Research Division, U.S. Department of Agriculture
Marketing Research Report No. 335.

Since the institutional wholesaling industry appeared to be on the threshold of rapid change, this study was designed to define the operating policies and practices of nine successful wholesalers, and to record what services they were extending to help customers operate more efficiently and effectively. Areas involved were East, South, Midwest, and Southwest. Institutional sales volumes ranged from \$1 million to \$5 million annually.

Because of the wide variety of policies and practices, case studies were prepared for each firm. In spite of the variety of their individual services, one objective prevailed--all wholesalers adapted their operations to meet the specific needs of their customers. Trends projected into the future were: (1) Growth of specialization in serving food service operators; (2) decreasing use of cash and carry outlets; (3) increasing numbers of cooperative buying

groups; (4) cost-plus plans becoming more prevalent; (5) expansion of product lines; (6) closer collaboration between manufacturers, wholesalers, and operators.

99. PURCHASING PROFITS IN THE HOSPITALITY INDUSTRY,
Charles D. Corwin, Jr., Hospitality Education Program,
Florida State University, Tallahassee, Fla. 32306.

Based on experience and research, this study presented the advantages and pitfalls in delegating responsibility for purchasing as food service units grow in size and/or numbers and management feels that its efforts would best be directed into such channels as planning, overall supervision, sales, and public relations.

Three purchasing systems were outlined: (1) Decentralized, where each department head was on his own; (2) centralized control, where one person issued numbered purchase orders and nominally controlled the purchasing of others; (3) centralized purchasing, where one person was assigned the task and attained knowledge of all items used in the business. Qualifications to consider when a person is being selected were given briefly, as well as the use of standards and specifications, plus the forms that simplify receiving, storage, and issue procedures.

100. RECONNAISSANCE REPORT ON CONVENIENCE FOODS--AN
INTRODUCTORY STUDY, 1966, Institutions Magazine,
1801 Prairie Avenue, Chicago, Ill. 60616.

The objective of this research was to learn how food service operators thought of convenience foods; which ones were using what products one-half of the time or more; forms in which meats, fish, poultry, and entrees were purchased; trends in the use of convenience foods; reasons for using; sources of information and availability of convenience foods; needs for new and/or better equipment; storage and packaging problems. A 4-page questionnaire was sent to a selected sample of 2,079 names of Institutions Magazine readers and the usable responses totaled 20 percent plus.

The current trend was one of significant increases in use and was universal throughout the industry, regardless of size, or type, of food service establishment. Because of the bearing of convenience food decisions on labor, costs, patron acceptance, and almost all other aspects of the total system, decisions were being made mainly by top management. The food processor needed more feedback of information and users more help in learning to use products effectively and efficiently.

101. SAFETY AND SANITATION USING FROZEN FOODS,
Mrs. Barbara Turner, Institutions Magazine,
March 1968, 5 pages.

Mrs. Barbara Turner, chairman of the Safety and Sanitation Committee of the National Association of College and University Food Services, conducted a

survey among major food manufacturers of frozen convenience foods to determine precautions instituted to protect buyers and consumers, investigated code requirements set by the American Food & Drug Officials of the United States AFDOUS, and studied the stability of frozen food reserves after varied time-temperature experiences plus current labeling practices.

Manufacturers code packages and these never remain in warehouse over 90 days, but recommend storing small quantities at 0° to -20° F. and faster turn-over. Labeling advocates that products be kept frozen in zero temperatures or less, until time of use. The AFDOUS Frozen Food Code is a guide to temperature standards for packaging, handling, and storing frozen food to maintain safety, grade, quality, and stability of characteristics subject to change.

102. SELLING THE HOSPITAL FOOD BUYER, Guide No. 1, 1962,
Institutional Food Service Manufacturers Association,
One East Wacker Drive, Chicago, Ill. 60601, \$2.50.

The purpose of the research that resulted in this Guide was to inform representatives of manufacturers and distributors regarding the specific and unique problems and needs of various types of hospitals, convalescent homes, and sanatoriums. During the research and development phases, IFMA's Marketing and Merchandising Committee received the assistance of the American Hospital Association and these magazines: Hospital Management, Catholic Building and Maintenance, Volume Feeding Management.

After listing sources of information about hospitals, the following principal sections were detailed: (1) Facts about hospitals; (2) the hospital "Cast of Characters"; (3) how hospitals buy; (4) who does the buying; (5) protocol for selling Catholic institutions; (6) knowing customer needs; (7) tangible factors influencing sales; (8) making a hospital sales call; (9) following upon a hospital sales call. A suggested salesman's call reference card was included.

103. SELLING THE HOTEL-MOTEL FOOD BUYER, Guide No. 2, 1963,
Institutional Foodservice Manufacturers Association,
One East Wacker Drive, Chicago, Ill. 60601, \$2.50.

The objective of this project was to research the unique needs of hotel-motel operators and how relations between buyers and suppliers could be strengthened through answers to the question: "What does a good salesman have to know and do to tell the hotel-motel food buyer"? Assistance was received by the IFMA Marketing and Merchandising Committee from Hospitality Magazines, Hotel Management-Review, Hotel-Motor Hotel Monthly, Institutions, and Volume Feeding Management.

Ten directories were listed as sources of prospects. Following this, these subjects were detailed: (1) Facts about hotels-motels; (2) types of food service facilities; (3) customers' needs; (4) how hotels-motels buy; (5) tangible factors influencing purchases; (6) who does the buying; (7) making a hotel-motel sales call; (8) time and frequency of sales calls; (9) important "Do's and Don'ts" of hotel-motel selling. A suggested salesman's call reference card was included.

104. SELLING THE RESTAURANT FOOD BUYER, Guide No. 4, 1967,
Institutional Foodservice Manufacturers Association,
One East Wacker Drive, Chicago, Ill. 60601, \$2.75.

Research for this project was undertaken to answer this question in comprehensive detail: "What does a foodservice salesman need to know and do to sell the restaurant buyer"? The IFMA Marketing and Merchandising Committee received cooperation from restaurant managements, associations, industry publications, foodservice brokers, distributors, and manufacturers.

The 1966 retail sales of the combined commercial and noncommercial food-service industry was given as \$28 billion. This Guide was devoted to the 93% made up by public eating places. Following an analysis of the industry, the following areas were covered: (1) Developing account information; (2) customers' needs; (3) what must be known about products; (4) best ways to make sales calls; (5) following up sales calls; (6) how creative ideas sell merchandise; (7) important "Do's and Don'ts"; (8) books and publications to improve knowledge of restaurant industry. A suggested salesman's call reference card was included.

105. SELLING THE SCHOOL, COLLEGE AND UNIVERSITY FOOD BUYER,
Guide No. 3, 1965, Institutional Foodservice Manufacturers
Association, One East Wacker Drive, Chicago, Ill. 60601, \$2.75.

This study was undertaken to determine how school and university buying differed from other food service operations and why these differences were important considerations in building sales and trade relations. The IFMA Marketing and Merchandising Committee received cooperation of school food service authorities, associations, publications, and institutional food brokers, distributors and manufacturers.

After sources were listed where information could be found regarding specific schools and colleges--enrollment, dining, dormitory facilities, staff--these principal subjects were covered: (1) Facts about schools, colleges, universities; (2) types of food service; (3) important personnel in schools; (4) customers' needs; (5) who does the buying and how; (6) tangible factors influencing purchases; (8) time and frequency of calls; (9) points a salesman should remember. A suggested salesman's call reference card was included.

106. SERVICES OF INSTITUTIONAL WHOLESALE GROCERS: OPINIONS OF FOOD
SERVICE OPERATORS, 1962, Agricultural Marketing Service,
Transportation and Facilities Research Division,
U. S. Department of Agriculture, Marketing Research Report No. 571.

The objective of this nationwide study was to obtain appraisal and evaluation from 350 selected food service operators of the feasibility of introducing improved and additional services and procedures in institutional grocery wholesaling similar to those proved successful in grocery wholesaling to food stores. Respondents included 175 table-service restaurants, 95 hotel restaurants, 46 cafeterias, and 46 employee food service operations.

Respondents in the survey bought from an average of 19 wholesalers, of whom 4 were grocery wholesalers. In general, small operators wanted services, while chain and large places did not. Services included: Preprinted order forms; quantity discounts; accounting and cost-control; more lines of merchandise; group promotion; portion counts and costs; menu and recipe planning. There was general agreement that better planning and concentration of purchases by operators would reduce wholesale operating costs and increase cooperation with individual customers.

107. SUCCESS FORMULA FOOD STUDY, 1966, Volume Feeding Management,
205 E. 42nd Street, New York, N.Y. 10017.

Because of the growing importance of manufacturer-prepared foods in the food service market, this over-all study was designed to reveal the degree of understanding on the part of operators (plus wholesalers and employees) that the correct use of convenience foods depended on a total plan including labor, equipment, schedules, service and patrons' needs. Four mail surveys were conducted--two operator studies, one wholesaler study and one employee attitude study. Return ranged from 21% to 34%.

Among the names considered appropriate by food service operators, "portion control" was ranked first and "convenience foods" second. Of all manufacturer-prepared foods, meat, fish, and poultry items were considered potentially most valuable with 7 out of 10 checking, followed by bakery items (53%) and prepared vegetables (frozen, mixed with sauces, etc., 44%) plus desserts, specialty entrees, and diet foods singled out by over a third of the respondents. The major advantages as seen by operators were: (1) Save labor and time; (2) accurate cost control; (3) permit fast service; (4) consistent quality. Thirty-five charts summarized the findings and comments.

108. THE ELUSIVE AUTOMATIC MERCHANDISING MARKET,
Vending Times, May 1967.

In this food purchasing study, operators were asked to indicate how much per month they purchased--in both dollars and pounds, cans, packages, etc.--within the following foodstuff categories: (1) Miscellaneous fresh and refrigerated products; (2) canned goods; (3) dried commodities and condiments; (4) packaged items; (5) baked goods.

The vending industry spent more than \$221 million in 1966 for foodstuffs it needed to serve its customers. Retail sales were approximately \$813 million. Thirty-one percent of operators relied on sandwich services, commercial caterers or restaurants to supply them with prepared sandwiches. Individual canned soups and entrees appeared to be the backbone of the small operator's menu. It was estimated that 15% of the independents answering the questionnaire indicated that they offered manual food service.

109. THE MENU: YOUR GUIDE TO FOOD BUYING,
Volume Feeding Management, April 1965, 22 pages.

The objective of this project was to assemble grades, standards, and information related to various foods that could be used in formulating specifications for efficient, economical and accurate buying. Studies were also made of how menus were used in planning and controlling food purchases, preparation and service.

Specifications were defined as statements of particulars in specific terms which communicate exactly what is wanted and in words both the purchaser and purveyor understand. Recommendation was made that specifications be prepared and written down for every item on the menu and that this procedure be followed: (1) Know what is available; (2) consult trade and Government standards concerning packaging grades, and varieties; (3) conduct your own kitchen tests to ascertain what's best for you. Information regarding 23 food categories was also presented.

Additional Reference Sources in this Report Pertaining to Purchasing

In addition to foregoing abstracts, additional information pertaining to the subject may be found in the following abstracts which are presented elsewhere in this report:

<u>Abstract No.</u>	<u>Publication Title</u>
33	The Food Service Industry: Its Structure and Characteristics, 1966
42	The U.S. Eating-Out Market
47	A Survey of Meat Use In Restaurants In A Major Metropolitan Area of the U.S.
56	Convenience Systems
80	The Use of Poultry In Food Service
120	Computers In The Food Service Industry
123	Convenience Foods: The Operator Speaks
135	Frozen Foods: Questions Most Often Asked
181	An Information System For The Control of Logistics In Hospital Departments of Dietetics
186	Computers Are Changing Methods of Management In Food Service

FACILITIES DESIGN AND OPERATIONS ANALYSIS

The term "facilities design" as used in this report pertains to the design or physical location of storage, production, customer, employee, and office facilities, or both, and the equipment associated with these facilities. The psychological impact of facilities design upon customers and employees is presented, respectively, in the "merchandising" and "personnel management" chapters of this report. Operations analysis is defined as a comprehensive evaluation of such factors as product flow and work methods which includes the quantitative measurement of manpower, equipment, material, supplies, and other variable expenses per unit quantity of finished goods.

The planning, analyzing, and evaluating of both new and old food service operations has been an individualized process and, in general, accomplished on an intuitive "hit-or-miss" basis. Although some studies have been made in applying industrial engineering methods to food processing and service, today's changes and requirements call for totally integrated systems that will accomplish specific production, quality, and service at the lowest possible costs. With similar objectives in mind, the Armed Forces, especially the Navy, have accomplished much in developing physical systems through planning layouts, designing equipment for available spaces, and achieving effective materials handling, processing, and service. Experiments are being conducted by some universities with computers to determine optimum product flow, productivity, and other related factors. With the aid of computers, mathematical models may be designed to evaluate specific types of operations which will not only be more precise but meet specific objectives of new eating places. Principles can be distilled from this experience to update older installations.

In laying out customer service and food production areas, considerations of speed, cost, and "unhurried turnover" are becoming increasingly important. This is especially evident in fast food types of operations. Industrial engineering principles and methods can be applied more thoroughly to food service, and thus relieve personnel of as much walking and manual work as possible.

Several operators interviewed stated that the entire food service industry could progress much more rapidly and effectively from closer working relationships between food equipment manufacturers, consultants, engineers, and operators. In this way, the industry should be able to handle changes more realistically and rapidly, and even develop systems that anticipate changes.

With decreases in kitchen skills and increases in the use of standard recipes and preparation procedures, needs for automated equipment and reliable controls are increased. The lack of adequate devices in this area has compelled some operators to engineer and build their own equipment.

Research Gaps

It is recommended that the following research projects be inaugurated in order of priority:

1. Design and conduct operations analysis research of successful food service operations by type to (1) quantitatively evaluate specific production elements and establish the criteria for basic production costs, (2) determine which production elements of various food service systems are similar and which are not, and, (3) determine the overall efficiency of various food service production systems.
2. Conduct research to improve deficient production operations which are common to most food service operations.
3. Develop a mathematical model for computer application to evaluate food service systems. Upon refinement, this model could be utilized for various simulation applications such as the evaluation of proposed changes in work methods and the impact of automated equipment upon various food service systems.
4. Evaluate the effectiveness of the mathematical model developed in item 3. Research kitchen, work, and service installations from the viewpoints of the individuals who are involved and affected through interviews and observations and compare these with the judgments of managements regarding the values of the developed model and the results obtained.
5. Determine what can be accomplished by means of structured problem solving and systems development "work" conferences or seminars with manufacturers, engineers, consultants, and operators of similar eating places. Research and analyze such conferences in order to outline the most effective methods for everybody involved to obtain the greatest benefits from such participation.
6. Conduct research to determine the economic feasibility of establishing a centralized computer facility. This facility could be made available to the industry on a time-sharing basis.
7. Conduct research to determine the frequency of mechanical or electrical failures of food service equipment crucial to the continuation of production, such as dishmachines, ovens, friers, and similar equipment. Upon determination, establish preventive maintenance procedures which will reduce and/or eliminate the equipment breakdowns.

Facilities Design and Operations Analysis Abstracts

110. A COMPUTER PROGRAM DESCRIBING HEAT PENETRATION IN FROZEN FOODS, Thomas E. Hampel, Asst. Chief Engineer, American Gas Association Laboratories. Report presented at 10th Conference, April 1964, Society For Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610, 21 pages. Xerox copy \$2.10.

This project dealt with studies of high-speed heat application for reheating frozen food. The objective was to determine the fastest reheating method in terms of package center temperature evaluation from zero degree F. while producing food of satisfactory quality and appearance. Because of the complexity of the study and the number of cases involved, a computer program was devised and applied.

The result was a method that can be followed to prescribe the fastest and most satisfactory reheating times and temperatures. Reheating was considered a two-step process: (1) Application of heat to the surface and (2) transfer of heat from the surface to the interior. Calculations were based on the foods in rectangular packages most commonly used. Formula, tables, and charts are included.

111. A NEW ROLE FOR MICROWAVES, Morris R. Jeppson,
Food Service Research Digest, Spring 1964,
National Restaurant Association,
1530 N. Lake Shore Drive, Chicago, Ill. 60610.

The objective of this paper was to review the applications, advantages, and limitations of microwave ovens. Since consumer acceptance was found highest for fresh foods, followed in order of preference by frozen, freeze-dried, canned, and air-dried, evidence was presented to illustrate how microwave methods showed promise for improving the quality or convenience of each of these five food types.

The unique properties of microwave energy make it different from other methods of heating. All other methods depend upon the transfer of heat, first to the surface of a product and the subsequent slow conduction of heat through the product. Microwaves pass through foods releasing some of their energy in the form of heat. Heating time is determined simply by the amount of microwave power in the oven and the amount of product to be heated. The principle can be applied to any form of food production.

112. A STUDY IN KITCHEN LAYOUT IMPROVEMENT - BASED UPON INDUSTRIAL ENGINEERING STUDIES AND TECHNIQUES, U.S. Naval Supply Research Facility, Food Service Research Digest, Winter 1964-65, National Restaurant Association, 1530 N. Lake Shore Ave., Chicago, Ill. 60610.

This was an industrial engineering study in a mock-up kitchen at the U.S. Naval Research Facility to determine which pieces of food preparation equipment were most used and where they were best located in relation to each other. Analysis was made of one man preparing three meals a day for 80 persons over a period of 16 days. The cook was instructed to use the Navy Recipe Service and to work at his normal pace. The pieces of equipment involved totaled 37.

Twelve most important inter-relationships developed among pieces of equipment in the area studies out of 171 possible combinations over the 16 day period. Of the cook's physical work time, 92.1% was spent at 7 locations. Seven important deficiencies in layout were noted. When the layout was revised, on the basis of the findings, the aggregate distance moved during the test was reduced from 44,428.4 feet to 30,129.7 feet, a saving of 32.2%.

113. A STUDY OF MANUFACTURER/DEALER RELATIONS IN THE FOOD SERVICE EQUIPMENT INDUSTRY, 1964, Volume Feeding Management and Restaurant Equipment Dealer, 205 E. 42nd St., New York, N.Y. 10017.

Because relations among equipment manufacturers and dealers had important bearings on the guidance and assistance received by food service operators, this study was designed to reveal how the interdependence between these groups could be correlated and the effectiveness of their interactions improved. The manufacturers' questionnaire was sent to 200 and replies were received from 58. The dealers' questionnaire was sent to 640 and replies were received from 184.

In spite of the many problems in manufacturer-dealer relationships, one point came through strongly in this study--some manufacturers were enjoying profitable relationships with some of their dealers. Manufacturers did not think alike, nor did dealers, regarding how food service operators were best sold and serviced. Consequently, explanatory comments to many of the 32 questions were reproduced liberally in the report.

114. ASPHALT PAVING FOR PARKING AREAS, DRIVEWAYS AND WALKWAYS, Charles T. McGavin, The Cornell Hotel and Restaurant Administration Quarterly, Vol. 5, No. 4, February 1965, 44 pages.

This study, sponsored by the American Hotel and Motel Association, was designed to acquaint the reader with the types, characteristics, applications, and specifications of asphalt paving to evaluate and meet specific location needs.

The handbook that resulted described the different types of asphalt paving applicable to parking lots, driveways, and foot paths. It also gave pertinent specification requirements, suggested guide lines prior to installation, ideas on site plans and drainage, plus recommendations on parking lot layout, lining, and the use of parking lot delineators. Suggestions were also given on maintenance, repair, and overall costs. The principal objective was to enable the operator to get the most serviceable paving job for his site and to save money in the process.

115. ATTITUDES ABOUT SANITATION IN RESTAURANTS, from Health Officers News Digest, Oct. & Nov. 1966. Food Service Research Digest, Autumn 1966, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

This study was conducted by the Department of Psychology of Pennsylvania State University, and the Pennsylvania Department of Health, under a grant from the U.S. Public Health Service, Department of Health, Education, and Welfare. The objective was to gather data that would provide documentation of the extent of compliance with established (sanitation) standards, to provide an understanding of the reasons for the apparent discrepancy between desirable and actual behavior, and to suggest procedures that might diminish the size of the gap that was found to exist.

The study showed that fear was the prime motivational factor among food service personnel in compliance to sanitation standards, and they were not aware of the broad scope of essentials necessary for a good sanitation program. Patrons were unaware of good sanitation procedures and seldom complained. In all, 15 major pressing problem areas were revealed and solutions were suggested for each one.

116. CAN A COMPUTER PLAN A KITCHEN? Lendal H. Kotschevar.
Food Management, School and College, November 1967.

The objective of this article was to describe the mathematical concept of design simulation applied to food preparation areas.

When data on the types of foods to be prepared are related to equipment requirements, the computer can assist management in determining the type and amount of each piece of equipment and in locating the units for the most effective utilization. The travel distances of employees can also be minimized by this technique. Such applications have a direct bearing on costs and speed of service.

117. COMMERCIAL KITCHENS, Nicholas F. Schneider and O. Ernest Bangs, Cornell University, School of Hotel Administration; Edgar A. Jahn and Arthur Q. Smith, American Gas Association, 1962. American Gas Association, Inc., 605 Third Avenue, New York, N.Y. 10016, 258 pages. \$7.50.

The objective of this study was to develop a comprehensive guide to those who design, recommend, and consult on facilities for the production, processing and finishing of food for volume feeding operations. During the research phase, material was collected directly from informed and experienced sources and was evaluated for practical value in solving the problems of commercial kitchen design and management.

The chapter headings elaborated in this guide follow: The Gas Industry; Gas Cooking Appliances; Commercial Cookery; Commercial Kitchens Ventilation; Waste Incineration; Water Heating for Commercial Kitchens; General Kitchen Planning; Cooking Equipment Selection; Food Service Layouts; Hospital Food Service; Planning the School's Food Facility; Planning the Employee Feeding Installation; Community Hall Food Service Planning; and Fuel and Energy Computations and Comparisons.

118. COMMERCIALLY PRE-PREPARED FROZEN ENTREES, Vance A. Christian.
The Cornell Hotel and Restaurant Administration Quarterly,
Vol. 6, No. 3, November 1965, 11 pages.

This report summarizes the use of preprepared frozen entrees in a commercial transient hotel located in a city of 200,000 population. Explanation is made of the factors which had to be considered in the preparation and planning stages including: (1) Total staff orientation; (2) product evaluation; (3) equipment selection; (4) employee work analysis; (5) menu construction; (6) food accounting and control system.

Despite the planning, management's employee orientation was not successful and at the end of the first year, the hotel had an entirely new staff working under a new manager. The menus became monotonous. However, payroll expense was reduced and food production and service were speedier. Finally, food sales actually increased with fewer guest complaints. A six-page table was developed to enable hotel and restaurant operators to rate commercially available products.

119. COMPUTER MODEL FOR NEW PRODUCT DEMAND, Morrie Hamburg and R. J. Atkins, Harvard Business Review, March-April, 1967.

This article describes the successful development and use of a computer model in forecasting production of a product.

The capacity for a product or line to prove successful depends a great deal on realistic and critical evaluation of future happenings and trends by company executives. The assistance of electronic data processing is helpful in providing fast correlation of assembled facts through forecasting models. This analysis, coupled with management's judgments can provide more quantitative means of decisionmaking in the future. The system described is one used by a pharmaceutical company, but the concepts can be related to food manufacturers and to the food service industry.

120. COMPUTERS IN THE FOOD SERVICE INDUSTRY, I. S. Anoff.
Report published in Proceedings of the 13th Conference, October 1965, Society for the Advancement of Food Service Research, 1530 N. Lake Shore Dr., Chicago, Ill. 60610, 6 pages. Xerox copy 60¢.

This was an inquiry into why the equipment manufacturing and distribution industries were slow to respond to the application of electronic data processing following a demonstration of potentialities sponsored by Food Service Equipment, Inc., in 1956. In this demonstration, consideration was given to the needs of five types of equipment dealers.

High costs comprised the principal deterrent. However, applications have been started in recent years. Initially, these included shop costs and payroll; billing, accounts payable and receivable; salesmen's statements. Benefits of these applications were cited. Other more recent uses (sales orders, inventory, and so forth) were also described. A standard application system was considered impractical because of varying natures and volumes of business. The need for innovation and practical applications were thought means to improve service and operating methods.

121. CONVENIENCE FOODS: A PROGRAM FOR TODAY AND TOMORROW, R. D. Chaffield, Robert Dawson Chatfield Associates, Stamford, Conn.

The objective of this project was to review the history of convenience foods, the specific qualities of various types of equipment, the employment and training of staff, the new foods, and the economics of convenience foods.

In new operations it was found necessary to give thought to menu requirements, the type of service and the serving period in order to bring together the convenience foods, the equipment, and the arrangements to accomplish the desired objectives. When each step was analyzed and carefully planned, the need for any technically trained food preparation personnel was eliminated and the quantities of supporting people reduced. While requirements for frozen food storage facilities were increased, this was offset to a degree by the reduction in the normal temperature refrigerator in conventional kitchens. Thus an operator of a new food service could expect lower initial capital costs as well as reduced labor costs through adoption of convenience foods.

122. CONVENIENCE FOODS AND THE FOOD SERVICE MARKET, Roslyn Willett, President, Roslyn Willett Associates. Report presented at 8th Conference, May 1963, Society For Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610, 25 pages. Xerox copy \$2.50.

The objective of this research study, underwritten by the Market Forge Company, was to reduce confusion in the food service industry and to provide some guidelines to future planning. Personal interviews were conducted with more than 100 companies and individuals to learn how new food technologies could lead to increased and varied supplies of convenience foods, plus the technical problems then being encountered. Current packaging, portioning, and marketing methods were also studied as well as some of the thinking behind the use of such products in the food service industry.

On one point there was unanimous agreement: The food service industry is moving in the direction of mass preparation of food, with production facilities separated from the serving facilities. In the report, after convenience foods were defined, the various processes of preparing these products were presented along with the plus and minus characteristics that resulted. The packaging, reconstitution methods, and operating experiences were also evaluated. In the conclusion, brief projections were made into the immediate future of the industry.

123. CONVENIENCE FOODS: THE OPERATOR SPEAKS, Volume Feeding Management, December 1967, 8 pages.

This study was conducted to answer some of the questions being asked about convenience foods, processes for reconstitution, storage, use, labor saving pros and cons, quality, and so forth, and to attain better understanding of how operators were reacting to the products that were available or being offered. A questionnaire was tested, then mailed to a random sampling of 2,000 readers of Volume Feeding Management. Replies were received from varied types of operations including restaurants, hospitals, schools, colleges and camps, hotels, motels and clubs, employee feeders, and caterers.

Answers covered a wide variety of products that were frozen, freeze dried, preprepared entrees, fish, meat, vegetables, pastas, soups, and so forth. Operators noted from whom they bought these products, how they stored them, and what methods and equipment they used to prepare them for service to

customers. Many operators continued to ask for more complete ways of learning relevant details about convenience products.

124. DEALING WITH THE GREASE DUCT FIRE PROBLEM, Richard E. Stevens, National Fire Protection Association. Food Service Research Digest, Spring 1964, National Restaurant Association, 1530 N. Lake Shore Dr., Chicago, Ill. 60610.

The objective of this article was to report the research and development under way to reduce fire losses in grease removal systems. A study by the National Fire Protection Association indicated that of 400 restaurant fires studied, 18.5 percent originated in grease hoods and ducts or spread into hoods and ducts from cooking equipment under the hoods.

The Standard for Ventilation of Restaurant Cooking Equipment, NFPA No. 96, was developed in 1946. In spite of its clarity, grease system fire losses were increasing because the provisions of the Standard were not being complied with, or, once installed, a system complying with the Standard was not kept clean. The research was directed at eliminating the element of human failure.

125. DELAYED SERVICE COOKERY, Joseph M. Dymit, Swift & Company Research Laboratory. Food Service Research Digest, Winter 1962, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

This project was designed for food service operators to help solve some of their problems in meat cookery, to increase the efficiency of skilled labor in the kitchen, and to develop methods which would allow operators to serve uniformly prepared meat products day after day. The first report was given at the 1961 National Restaurant Association Convention. Subsequently, additional research was conducted to solve some of the problems encountered by users of the method.

Three factors made this method of cookery a bacteriologically sound procedure: (1) The meat was held at temperatures above which growth of food poisoning bacteria occurs; (2) the contamination was limited in meats to the surface, and this part received severe heat treatment in the browning oven; (3) the partially dehydrated (browned) surface was unfavorable to the development of bacteria.

126. DIGITAL COMPUTER SIMULATION IN DETERMINING DINING ROOM SEATING CAPACITY, Marie F. Knickrehm, Journal of American Dietetic Association, March 1966, 5 pages.

A program to simulate the operation of a dining facility was developed to study the effects on a facility of changes in the parameters of the system. This is a tool which will provide management with a quantitative basis for decisionmaking related to a food facility.

127. DIGITAL COMPUTER SIMULATION OF A CAFETERIA SERVICE LINE,
Marie E. Knickrehm, Thomas R. Hoffmann, and Beatrice Donaldson,
Journal of American Dietetic Association, September 1963, 6 pages.

A single-line cafeteria was simulated on a digital computer. Changes in operating procedures and layout were studied to establish the fact that this technique was feasible to determine the best plans and policies to follow for an efficient and economical operation.

128. EQUIPMENT MANUFACTURERS AND FOOD PROCESSORS, David R. Chase, Manager - Engineering, General Electric Co. Report presented at 8th Conference, May 1963, Society for Advancement of Food Service Research, 1530 N. Lake Shore Dr., Chicago, Ill. 60610, 13 pages. Xerox copy \$1.30.

The objective of this study was to analyze the causes of failures of equipment manufacturers and food processors to integrate their research and development in regard to the food service field with that of companies like General Electric. Their concern was that after food products appeared on the market, designing and engineering equipment specifically for them was difficult.

The report summarizes the findings developed through a consultant who dealt directly on equipment problems in depth with more than 30 food processors and over 100 individuals in these companies. The finding stimulated research into several areas including: (1) Meat temperature and color; (2) baking frozen pies; (3) reconstituting frozen entrees.

129. EQUIPMENT SERVICE AND MAINTENANCE, 1964 National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610. 35¢.

The objective of this technical bulletin was to summarize the research and experience of NRA's members and to acquaint food service operators with the many facets of kitchen equipment repair. Assistance was given by the National Association of Food Equipment Manufacturers and the National Society of Refrigeration Engineers.

It was found that skillful management of kitchen equipment contributed to smoother operation and lower costs. However, the real groundwork for this was best laid at the time the equipment was purchased. One significant factor often overlooked was the selection of the proper size or capacity. Purchase time also proved best for discussion of warranty provisions, service facilities and to evaluate the reputation of the dealer. Included in the bulletin was an equipment care checklist and a brief outline of 9 steps to "get the job done."

130. EVALUATION OF SHORTENING FOR NAVY USE, Harold Garfein, Food Science and Engineering Division, U. S. Naval Supply, Research and Development Facility. Report published in Proceedings of 11th Conference, September 1964, Society for Advancement of Food Service Research, 1530 N. Lake Shore Dr., Chicago, Ill. 60610, 22 pages. Xerox copy \$2.20..

Shortening was used in sufficient volume for baking, sauces, meat and vegetable dishes, and deep-fat frying to warrant tests which would lead to conclusions based on fat or shortening usage to produce desired quality at stated costs. Questions to be answered were these: When should a fat or shortening be totally replaced in a fryer? Should it be on a basis of one complaint of a customer who thinks the food is too greasy, or tastes bad, or has an off-color? Should it be based on several complaints? Should it be replaced on the judgment of the cook?

Previous research by other investigators was reviewed, followed by detailed descriptions of test procedures and test results. Nine tables of test results were included.

131. FIRE SAFETY FOR RESTAURANTS AND EATING ESTABLISHMENTS, Food Service Research Digest, Autumn 1966, National Restaurant Association, 1530 N. Lake Shore Dr., Chicago, Ill. 60610.

Late in 1964 a group of interested persons from restaurants, insurance companies, and fire service agencies in Ohio met to research the problems and develop a program of education for restaurant operators and their employees in fire safety with the ultimate goal of reducing fire losses. The Fire Service in Ohio had reported 274 restaurant fires in 1963 with a loss of \$1,168,694.

The committee concluded that there were three major causes of fires in restaurants and eating establishments: (1) Fires involving cooking equipment, including range hoods and grease ducts; (2) faulty electric wiring and extension cords; (3) poor housekeeping, including hazards of ash trays emptied into trash cans. Outlines of fire safety methods on each of these subjects were prepared in accordance with standards published by the National Board of Fire Underwriters and the National Fire Protection Association. In addition, a self-inspection checklist was prepared for use by individual operators.

132. FLOOR MATS AND RUNNERS. National Safety Council Data Sheet No. 595, Food Service Research Digest, Winter 1966-67, National Restaurant Association. 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

This study was designed to review how mats and runners of various materials and types were used in accident prevention, to reduce fatigue, protect other surfaces, reduce noise and breakage, and control total costs. The objective was to provide operators with data that could be used in arriving at decisions to buy or rent mats and runners for specific purposes.

Mats and runners were widely used to provide better slip-resistant walking surfaces than bare floors. They were used: (1) Inside and outside of building entrances to help prevent falls where water, snow, or other material might make the floor surface slippery; (2) in lobbies and corridors to provide better footing; (3) around swimming pools, in shower stalls, around drinking fountains, and other areas where water, oil, food, waste, and other material on the floor might make it slippery. Types of mats were described in detail to specify their most effective use, and procedures outlined for accident prevention.

133. FOOD-BORNE ILLNESSES, 1963, Technical Bulletin,
National Restaurant Association,
1530 N. Lake Shore Dr., Chicago, Ill. 60610. 25¢.

Because food-borne illnesses occurred through the introduction of diseases by employees or customers with oral or nasal discharge in handling or in contact with food or food-serving utensils, the objective of this project was to assemble the research materials from public health sources and to summarize the findings in an easily read reference chart.

The chart was developed in two parts: (1) Illnesses of frequent occurrence; (2) illnesses of less frequent or rare occurrence. These sections were divided into five columns: (1) Name of illness; (2) causative agent; (3) foods usually involved; (4) how introduced into food; (5) preventative or corrective procedures. A total of 15 illnesses were listed and analyzed.

134. FOOD EQUIPMENT STUDY, 1964, Volume Feeding Management,
205 E. 42nd St., New York, N.Y. 10017.

This survey of the volume feeding market was conducted to determine the use of 119 different kinds of food equipment. Mailing was made of 6,000 questionnaires to the magazine's circulation list and represented all segments of the market as provided by food equipment dealers; returns totaled 1,244, or 20 percent. The final report was submitted in January 1964. The objective of this study was to provide manufacturers with the tools to analyze the market for their individual products by market segment and by geographical territory.

Tabulations of the use of 119 different kinds of food equipment and supplies were charted to show the proportions of operations in the entire market that used specific types and were also shown for five specific segments of the market--public restaurants, hotels and motels, employee feeding facilities, hospitals, and schools and colleges. The number of pieces of equipment per 100 employees was given for both 1964 and 1959. Methods were outlined for using employment figures for calculating equipment sales goals by counties.

135. FROZEN FOODS: QUESTIONS MOST OFTEN ASKED, Robert Civin,
Frosted Food Field. Food Service Research Digest, Spring 1964,
National Restaurant Association, 1530 N. Lake Shore Drive,
Chicago, Ill. 60610.

The objective of this report was to answer the questions asked most frequently about frozen foods by institutional purchasers and chefs.

The questions treated were these: Can frozen foods be cooked without first thawing them? What is the best method for thawing frozen foods? Is there any specific information on which frozen food groups cook best if they are thawed? Can cooked frozen foods be held on the steam table or in a warming oven? Is it all right to refreeze foods that have been allowed to thaw? What types of grades or standards have been established for frozen foods? How important is brand name in ordering institutional frozen foods? In what sizes and weights are institutional frozen foods available?

136. GETTING GALLEY PLANNING OFF THE GROUND, George A. Pollak, Food Science and Engineering Division, U.S. Naval Supply, Research and Development Facility. Report published in Proceedings of 11th Conference, September 1964, Society for Advancement of Food Service Research, 1530 N. Lake Shore Dr., Chicago, Ill. 60610, 30 pages. Xerox copy \$3.

The purpose of this report was to present the methods followed and results obtained in developing food containers for use aboard naval aircraft that would be light in weight, highly efficient, low cost, and made from nonstrategic materials. Low in cost meant either single service or a limited number of times. Efficient meant keeping hot or cold food bacteriologically safe and retaining palatability for at least 6 hours.

Lightweight insulated galleys, based on the research findings, were designed to fit particular situations aboard aircraft, submarines, hydrofoil craft, high altitude craft, and small ships. Thermoelectric refrigeration was found to be perfectly suited to the needs of flight feeding systems. In addition, discoveries were made that stimulated further research to perfect these systems.

137. HOSPITALS DIETARY SERVICES--A PLANNING GUIDE, 1966, Division of Hospital and Medical Facilities, U.S. Department of Health, Education, and Welfare, Public Health Service Publication No. 930 - C - 11.

The objective of this project was to develop guidelines for planning a centralized hospital dietary service for general hospitals having 225 beds or less. Involved in the research were 35 dietitians, administrators, and consultants, plus 75 manufacturers of institutional food service equipment.

Coordination of the dietary service with total hospital operations was regarded as the dual responsibility of the hospital administrator and the dietitian. In detailing the guidelines, particular consideration was given to methods of operation, equipment, space requirements, physical design, and services. Automation, as well as the many developments in food processing, equipment, devices and techniques, was opening new approaches to planning; consequently a high degree of flexibility was recommended.

138. HOW TO CHART YOUR WAY TO EFFICIENT KITCHENS,
Dr. Edward Kazarian. College and University
Business, July 1966, 3 pages.

The objective of this report was to demonstrate why travel charting is an effective technique to evaluate layouts of equipment on the basis of flow.

An optimum arrangement of equipment or areas was achieved when the flow between them was minimized. There were two general concepts regarding the criteria used for travel charting. The first concept considered the movements of individuals between equipment or areas. Emphasis was placed on the desirability of forward movements against the undesirability of backtracking movements. The second concept considered the flow of material between equipment or areas. With some modifications, the technique can be used to evaluate other than straight line layouts. It is also possible to use different criteria, such as quantity of materials moved, as the basis for evaluation of layouts.

139. HOW TO SUCCEED IN LOSING QUALITY WITHOUT REALLY TRYING,
Pearl Aldrich, Food Service Research Digest, Spring-Summer 1966,
National Restaurant Association, 1530 N. Lake Shore Drive,
Chicago, Ill. 60610.

This paper was designed to review the research that had been conducted into the methods by which food materials progress through a series of stages until optimum acceptability is reached and then recedes.

The circumstances, attitudes, and loose production controls that contributed to quality loss were as follows: (1) Poorly defined expectations for standards of quality; (2) misunderstood concepts of economical uses of materials; (3) incomplete understanding of reasons for certain procedures; (4) insufficient supervision for quality and quantity production control; (5) mistaken notions about scheduling time-use for producing optimum quality; (6) disregard for or lack of understanding of the tools of quality.

140. IDEAS ARE FOOD FOR THOUGHT IN FOOD SERVICE PLANNING,
O. Ernest Bangs, The Cornell Hotel and Restaurant
Administration Quarterly, Vol. 2, No. 1, May 1961, 11 pages.

This study was conducted to develop a comprehensive guide for food service operators and to make them aware of the factors involved in good planning procedures.

The need was stressed for preliminary programming on the part of management for a food service operation to assure lowest costs in construction and operation. Planning involved twelve stages: (1) Organization; (2) location, building, and building site; (3) market potential; (4) type of operation; (5) service; (6) menu; (7) atmosphere; (8) service areas; (9) production areas; (10) personnel; (11) management; (12) maintenance. Through a complete analysis of these factors, coupled with creative thinking, it was believed

that a food service operation could be successful, not only from the outset, but for years to come.

141. IMPROVEMENT OF MEALS PREPARED AND SERVED IN ARMY UNIT MESSES, Thomas E. O'Brien. M.A. Thesis, 1957, School of Hotel Administration Library, Cornell University, Ithica, N.Y. 14850. Interlibrary loan.

Considering that the nutritional requirements of service men and women must be provided in the meals served, and that the successful operation of a military feeding establishment proved difficult, the objective of this study was to learn how the operating problems could be minimized or even eliminated.

Some unit commanders lacked interest in food and food preparation. This unconcern influenced the performance of cooks and was often reflected in the quality of meals served. Several differently designed kitchens were in operation. If all kitchens were set up according to one master plan, the following would be possible: (1) Time and motion studies could be conducted and results used in planning jobs and work; (2) standard procedures could be taught to obtain uniform quality; (3) food advisers could more easily discover causes of operating difficulties and offer measures to quickly solve problems.

142. INSTITUTIONAL FOOD SERVICE EFFICIENCY THROUGH PROPER EQUIPMENT AND DESIGN, John C. Friese, Dir. Food Service, Kent State University, Report presented at 8th Conference, May 1963, Society For Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610. 10 pages. Xerox copy \$1.

Based on the end result of cooking large quantities of food in small batches, with as short holding times as possible, this study was designed to spotlight the fundamentals of equipment design and kitchen-service arrangements that would produce the most acceptable products and stimulate pride, personal care, and satisfaction in the workers involved. Another requirement was that it would be possible for all facilities, equipment, tools, and environment to be cleaned, reconditioned, and returned or replaced after each operational use and be made ready for instant re-use.

A list of 19 fundamentals was abstracted from the findings, and these were used for attacking and avoiding the problems found in other operations. For example, one of the devices designed to meet these requirements was a four-purpose steam-heated unit to hold hot food when necessary, to store room temperature foods, to heat dishes, and to use as a glass-windowed room divider between the production areas. Six other illustrations are also described.

143. KITCHEN MACHINES, Data Sheet No. 545. National Safety Council Made available through Educational Materials Center, National Restaurant Association, 1530 N. Lake Shore Dr., Chicago, Ill. 60610.

This data sheet, reflecting experience from many sources, was intended as a guide for management and its representatives, including owners, supervisors,

and safety personnel, who in any way were responsible for providing safe working conditions, safeguarding machines, and establishing training and safe operating procedures.

A Bureau of Labor Statistics study showed that in one year the average frequency rate in over 3,000 food service establishments was 18 disabling injuries per million man-hours worked. A survey of 130 NRA members showed an average frequency rate of about 17 disabling injuries per million manhours worked. These rates were approximately 3 times the all-industry average. To reduce such figures, 35 recommendations were given for safe installation and operation of power-driven machines.

144. LABOR UTILIZATION AND OPERATING PRACTICES IN COMMERCIAL CAFETERIAS, 1969, John F. Freshwater and John C. Bouma, Transportation and Facilities Research Division, Agricultural Research Service, USDA, and Robert M. Lammiman, Horwath and Horwath, U.S. Department of Agriculture, Marketing Research Report No. 824. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, 50¢.

The objectives of this study included: (1) An evaluation of operating methods observed in cafeterias which were conducive to increasing labor productivity through better layouts, equipment, and work methods; (2) the development of man-hours per 100 customers for single-line and double-line commercial cafeteria operations as a tool for improving scheduling. Data were obtained from analyses of 12 commercial cafeteria operations distributed geographically over the United States.

The findings of the study indicated that 18.9 man-hours per 100 customers were required in single-line cafeterias and 17.8 productive man-hours in double-line cafeterias. Potential direct labor savings of 18.8 percent were effected in single-line cafeterias and 30.1 percent in double-line cafeterias through improved employee scheduling. Improvements in work methods and training resulted in additional savings. Detailed guidelines were presented for effecting savings thru reduction of man-hour requirements, improvement of layout design and gratifying work methods, plus increased effectiveness of personnel selection, training, and motivation.

145. LAYOUT, EQUIPMENT, AND WORK METHODS FOR SCHOOL LUNCH KITCHENS AND SERVING LINES, 1966, Agricultural Research Service. United States Department of Agriculture, Marketing Research Report No. 753.

The objective of this study included the development of (1) guides for planning of new school kitchens and lunchroom facilities for Type A meals; (2) standards of labor utilization for three sizes of cafeterias. Observations were limited to local kitchen operations. However, principles governing kitchen layout and labor utilization were applied to central kitchen operations as well.

This study of six lunch operations in Ohio indicated that a thorough job of planning new kitchen facilities paid off throughout life in terms of reduced

labor requirements. Best results were achieved in schools where the administration drew the kitchen manager into the planning, obtained ideas from visits to new facilities, and formalized plans in the form of tentative specifications. This helped the food service consultants and architects in their detailed planning. Recommendation was made that plans be reviewed with local and State school officials.

146. MCDONALD'S APPROACH TO FOOD SERVICE PROBLEMS, Louis J. Martino, Director, and Kenneth Strong, Food Technologist, McDonald's Research Laboratory. Report published in Proceedings of 12th Conference, April 1965, Society for Advancement of Food Service Research, 1530 N. Lake Shore Dr., Chicago, Ill. 60610, 29 pages. Xerox copy \$2.90.

The objective of this report was to detail the problems encountered in producing french-fried potatoes and fish sandwiches, and the research that was conducted to develop "The Cooking Computer." By means of this instrument cooking times were controlled to develop standard internal temperatures in finished products under varying circumstances. Nine additional devices researched to solve other operating problems were also presented.

The Cooking Computer monitored the temperature conditions of the fat during the blanching by means of a sensing probe located in the fat and buzzed when the cycle was completed. When the switch was pressed to stop the buzzer, the instrument was automatically reset for the next blanch. This method was adapted for processing fish sandwiches.

147. NATIONAL SANITATION FOUNDATION FOOD EQUIPMENT STANDARDS, John E. McAllister, National Sanitation Foundation. Report presented at 8th Conference, May 1963, Society For Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610, 16 pages. Xerox copy \$1.60.

The objectives of the National Sanitation Foundation (organized in 1944) were to: (1) Seek new facts in sanitary science; (2) advance technology of industry to meet modern problems of health officials; (3) sponsor educational programs and sanitation services; (4) seek solutions to problems involving cleanliness.

Six major points were presented in the report as follows: (1) History of NSF; (2) how and on what basis NSF Committees are selected and appointed; (3) how NSF standards are determined; (4) functions of the NSF Laboratory; (5) what the NSF Seal means to public health officials; (6) the important aspects of Standard No. 7 on Commercial Refrigerators and Storage Freezers and Standard No. 8 on Commercial Food Preparation Equipment.

148. NEW FORMULA RETAINS COLOR IN COOKED GREEN VEGETABLES,
James P. Sweeney, The Cornell Hotel and Restaurant
Administration Quarterly, Vol. 3, No. 3,
November 1962, 2 pages.

This article reported the research undertaken on methods to prevent the destruction of chlorophyll during the cooking of green vegetables and turning them yellowish. Previous attempts to prevent this conversion often resulted in a deterioration in texture and flavor. Six green vegetables were used--spinach, green peas, broccoli, lima beans, green beans, and brussel sprouts.

The results showed that the loss of chlorophyll was directly related to the degree of acidity of the vegetables. Vegetables having the highest acidity, such as green beans and brussel sprouts, suffered the greatest chlorophyll loss when cooked. Then monosodium glutamate and citrate-phosphate buffer were added. Green beans cooked in this water were less acid and maintained their color better. Furthermore, the citrate-phosphate buffer was more effective than monosodium glutamate for control of acidity and protection of color of green beans during cooking.

149. PARKING LOTS - SELF-SERVICE, National Safety Council Data
Sheet No. 597, Food Service Research Digest, Summer 1967,
National Restaurant Association, 1530 N. Lake Shore Drive,
Chicago, Ill. 60610.

The objective of this study was to research the experience in handling problems that developed in various types of self-service parking lots and to outline the principles that resulted.

Problems in parking lots depended to some extent on how the lots were used. Well-designed, self-service parking lots were not only attractive to customers and employees but they nearly eliminated parking damage to cars. This report described exactly how many of the hazards were avoided by proper design and operation of these lots and also listed further sources of assistance and detailed information.

150. PEST PREVENTION, 1964, National Restaurant Association,
1530 N. Lake Shore Dr., Chicago, Ill. 60610. 25¢.

The purpose of this bulletin was to present factual information concerning common insect, rodent, and bird pests, and to suggest proper measures for their control. The findings and facts were developed cooperatively by NRA and the National Pest Control Association, Inc.

Careful inquiries into the biology and habits of insects, rodents, and certain birds which infest foods, kitchens, buildings, and warehouses have now made it possible not only to control them but also to prevent them from becoming established where they have been harmful in the past. This report describes such pests and particularly how food service businesses may avoid and eliminate them.

151. PROPER MEAT COOKERY - GREATER PROFITS, National Live Stock and Meat Board, Food Service Research Digest, Autumn 1964, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

The objective of this report was to review the principles of basic large quantity meat cookery for the benefit of those who often forget them and to recommend the areas where more research information was required, principally in relation to new equipment being designed to simplify the preparation or to shorten the cooking or reheating time of all foods, including meat.

Research studies in both small quantity and large quantity meat cookery have shown that when meat was cooked at a constant low temperature there was (1) less shrinkage, (2) less watching during cooking, (3) less fuel consumed, (4) less labor for cleaning the roasting pans and ovens. Tables were presented listing meat cuts for roasting, broiling, grilling, braising, and cooking in liquid. Timetables were also printed for roasting beef, lamb, fresh pork, cured pork, and veal.

152. RAPID AUTOMATED FOOD PREPARATION TECHNIQUES AT THE UNITED STATES NAVAL ACADEMY, J. W. Martin, Food Science and Engineering Division, U.S. Naval Supply, Research and Development Facility. Report published in Proceedings of 11th Conference, September 1964, Society for Advancement of Food Service Research, 1530 N. Lake Shore Dr., Chicago, Ill. 60610, 7 pages. Xerox copy \$.70.

The objective of this research and development program was to feed the 4,200 midshipmen "family style" at the U.S. Naval Academy in improved facilities to: (1) Reduce average preservice preparation time from 2 hours to 1/2 hour; (2) reduce manpower requirements in food preparation areas by 25-30 percent; (3) reduce overall required production areas by 28 percent and travel distances by 75 percent and eliminate the need for 2,200 sq. ft. of new construction.

Through the installation of two pieces of equipment used in commercial food preparation and two continuous infrared broilers, plus reassignment of personnel, the number of stewards (military personnel) was reduced from 170 to 110, service was reduced from 5 to 2 1/2 minutes, sanitation was improved, noise level was reduced, and a goal was set toward which other studies of food preparation and serving areas could be conducted.

153. "READY" FOODS ARE READY, R. D. Chatfield, Robert Dawson Chatfield Associates, Stamford, Conn.

The objective of this presentation was to review for management the research that entered into the preparation of a plan for using convenience foods in the new food service building at Southern Connecticut State College in New Haven. The building was designed to serve approximately 1,200 resident students three meals a day and an additional 1,200 students one meal.

Ready foods were defined as food items on which work had been done prior to their receipt at a food service establishment and which required not more than one additional operation to make them ready for service. It was estimated that savings in equipment and space would be in the neighborhood of 25 percent over equivalent more conventional facilities without affecting the capacity of the plant or the quality of the food served. The number of persons required for a ready food service system was greatly reduced. A complete plan for using ready foods was also outlined.

154. RESEARCHING DESTROYER GALLEY DESIGN, Howard T. Brey, Food Science and Engineering Division, U.S. Naval Supply, Research and Development Facility. Report published in Proceedings of the 11th Conference, September 1964, Society for Advancement of Food Service Research, 1530 N. Lake Shore Dr., Chicago, Ill. 60610, 12 pages. Xerox copy \$1.20.

The objective of this research was to design a basic galley that could be adapted to the 500 sq. ft. space requirements of destroyer class vessels, with capabilities to produce sufficient food in short periods of time and feed 200 to 300 men in one hour at a rate of 10 men per minute at the peak of the rush. Within these confines were ordered the following: All preparation and serving equipment; hard ice cream equipment and storage; baking equipment and storage; pot and pan wash; hot and cold beverage preparation.

A mockup of a destroyer galley was constructed in the research laboratory to produce typical menus and serve them in prescribed periods of time. All movements of pitch and roll were measured and equipment was placed and protected accordingly. Time and motion studies decided placement of various units. From these findings an advanced concept galley was installed in a destroyer and proved 42 to 52 percent more efficient than the mockup.

155. SANDWICHES IN TIME AND MOTION, Margot Copeland, Wheat Flour Institute. Food Service Research Digest, Spring 1962, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

The National Restaurant Association reported that sandwiches were served as the main dish in 40 percent of all restaurant meals, or an average of 32 million sandwiches a day. The objective of this report was to review the research conducted in establishing the principles of time and motion economy, then to interpret them in terms of actual kitchen floor plans and sandwich-making procedures.

Six basic principles of time and motion economy were found most applicable to food production and were summarized around two fundamental ideas: (1) Orderly and planned equipment arrangement was necessary; (2) the most efficient worker was one who used the least amount of energy and time to perform a given task. Seven completely detailed diagrams showed equipment arrangements for various space sizes and shapes, and explanations were given of logical work progressions.

156. THE APPLICATION OF INDUSTRIAL ENGINEERING TECHNIQUES TO FOOD PRODUCTION AND SERVICE IN HOSPITALS, Grace L. Stumpf, Director of Dietetics, University of Michigan Medical Center. Report presented at 6th Conference, April 1962, Society For Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610, 10 pages. Xerox copy \$1.

Following a short orientation period, the objective of this research was to apply industrial engineering methods of work analysis--time study, work sampling, simulation--to every phase of physical facilities, methods of food production and service, and to department financial records so that the effectiveness of food service could be maximized at the lowest possible costs. Food service responsibilities covered 1,040 bed patients plus 3,000 employees and 1,000 out-patients and guests per day.

Time and motion studies of people involved in the most costly systems revealed that disproportionate efforts were expended on unnecessary travel caused by poor locations of supplies, equipment, and movable utensils. The second greatest waste was caused by poorly defined work methods in processing food and during cleanups. Workers had not been aware of these shortcomings. Detailed programs were outlined as guides to modifications and improvements.

157. THE APPLICATION OF MASS PRODUCTION TO A LA CARTE FOOD SERVICE USING PREPARED-TO-ORDER FOOD, Research Section, School of Hotel Administration, Cornell University, The Cornell Hotel and Restaurant Administration Quarterly, Vol. 6, No. 2, August 1965, 44 pages.

This was a preliminary report on a project involving "Ready Foods" which were processed to the point where they could be frozen and stored, and when ordered by a dining room patron could be finished and served within an acceptable time.

The preparation of "Ready Foods" was described from the portion packaging stage through freezing, storage, and reconstitution. Recommendations as to methodology and type of equipment were provided so that the reader could understand the steps involved. Also covered was the serving of "Ready Foods," sanitation problems, and food cost accounting. Finally, 34 recipes and procedural directions were included for soups, fish, chicken and meat entrees, plus several desserts. These foods were thoroughly tested, held in freezer storage 1 to 6 months, then reconstituted, and served with excellent results.

158. THE ARMY'S EXPERIENCE WITH READY FOODS, Marion C. Bollman, Chief, Menu Planning Division, U.S. Army Food Service Center. Report presented at 15th Conference, October, 1966, Society For Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610, 12 pages. Xerox copy \$1.20.

The research and consumer testing of convenience or ready foods conducted, beginning in 1942, by the U.S. Army Food Service Center was summarized in this report. The logistic characteristics as related to foodstuffs meant more food

for less weight, requiring less shipping space, less time and effort in preparation, less skill and training for kitchen personnel, and better keeping quality. The four military services were interested in the program.

Within a 6-year period, 37 new ready- or convenience-type foods were introduced and included in the Master Menu, which was published on a monthly basis and prescribed what would be served each day for breakfast, dinner, and supper at each installation. Included in this list were: Prefabricated frozen meats, fish, poultry; freeze-dehydrated meats; dehydrated fruits and vegetables; dehydrated soups, cheese, bakery mixes, ice cream mix.

159. THE CONTROL OF HEALTH HAZARDS IN PERISHABLE FOOD,
W. L. Mallmann, Ph.D., Department of Microbiology and
Public Health, Michigan State University. Report
presented at 6th Conference, April 1962, Society For
Advancement of Food Service Research, 1530 N. Lake
Shore Dr., Chicago, Ill. 60610, 10 pages. Xerox copy \$1.

After defining environmental health, an analysis was made of the educational and regulatory factors required for the effective control of health hazards in food service.

These factors were presented as primary: (1) Control will result only from a biological approach in addition to physical inspection; (2) education and indoctrination must be aimed at management as well as personnel; (3) milk, processed foods, meats, and fish, plus processes must be inspected at sources as well as in plants; (4) foods must be heated to lethal temperatures for all bacteria in cooking; (5) all contact surfaces of equipment and containers must be rinsed in 170° F. water or dipped in approved sanitizers. Recommendation was made that standards be established only after methodology was evaluated.

160. THE EVOLUTION OF A FOOD SERVICE ESTABLISHMENT,
Alexander N. Mastoris, M.A. Thesis, 1967.
School of Hotel Administration Library, Cornell
University, Ithaca, N.Y. 14850. Interlibrary Loan.

The objective of this study was to program procedures and the involvement of professional individuals from the original concept to the first ring of the cash register on opening day in order to insure success of a restaurant, and profit and satisfaction to management.

The program began with a feasibility study that incorporated the owner's ideas, standards, and goals, and served as the basic framework of the master plan. When approved, working drawings of layout, equipment, furnishings, and fixtures, as well as specifications, were prepared. Bids were then collected, decisions made, and construction planned, in addition to testing and inspection of all equipment and materials. The conclusion was that a well-thought-out program rewards management for great investments of time and money.

161. THE LANKENAU STUDY. Institutions Magazine,
August 1966, 9 pages.

This study was conducted to learn the direct effect that a convenience food system had on productivity and labor. It was sponsored by the Campbell Soup Company and carried out by Price, Waterhouse and Company at Philadelphia's Lankenau Hospital in two phases of 3 weeks each: The first using the existing conventional feeding methods, and the second, for direct comparison, using a total convenience system.

Food preparation time in Phase II was 34.3 percent under preparation time in Phase I. Direct labor costs per meal were reduced 7.9¢ and direct material costs (food costs) increased by 1.7¢. Results from product satisfaction testing conducted on the same three entrees in two phases of the study indicated that both patients and hospital staff personnel felt the quality and taste or flavor of the convenience entrees tested were as good as (in one test) or better than (in two tests) the comparable premise-made entrees.

162. THE SANITARIAN AS THE RESTAURANT OPERATION SEES HIM,
Donald M. DeBois, M.P.H., Food Service Research Digest,
Winter 1964-65, National Restaurant Association,
1530 N. Lake Shore Dr., Chicago, Ill. 60610.

The two objectives of this study were to: (1) Evaluate the degree of sanitary practice being achieved; (2) evaluate the human relations practices which generated the relative change or absence of change. It was conducted in 1962 for the Los Angeles County Health Department by the Institute of Industrial Relations at UCLA. A total of 153 restaurant operators were interviewed.

The attitude of the restaurant operators was positive toward the sanitarian and his function in society and the industry. There was general acceptance of the idea that a high standard of sanitary food handling contributed to business success, but employees felt that operators passed the buck to sanitarians on practices that were unpleasant or difficult to handle. Operators respected strict sanitarians and believed that best results were related to skills in handling human relations effectively.

163. THE SUB-STANDARD WASHROOM - HIDDEN MENACE TO SUCCESSFUL
RESTAURANT OPERATION, Food Service Research Digest,
Autumn 1966, National Restaurant Association,
1530 N. Lake Shore Drive, Chicago, Ill. 60610.

The objective of this study was to determine the attitude of people who dine out to washroom facilities in public restaurants and whether or not there was room for improvement. The research was conducted for The Tissue Association by Crossley, S-D Surveys, Inc. Three panels of restaurant patrons were established; one of men only, the second of women only, and the third of married couples. Data were gathered through group discussions under the guidance of a trained researcher.

Two major points emerged from the discussions: (1) Washroom facilities at most table service restaurants did not meet individual standards of cleanliness and comfort, but these people were conditioned to expect substandards; (2) even though they had conditioned themselves to expect poor conditions, not one of the participating panelists ever voiced a complaint to restaurant management. Just what patrons expect in a washroom centered around planning with their comfort and conveniences in mind. Detailed suggestions were also made.

164. THE WONDERFUL WORLD OF BARBECUING, James E. Wingerden,
National Live Stock and Meat Board. Food Service Research
Digest, Winter 1963-64, National Restaurant Association,
1530 N. Lake Shore Dr., Chicago, Ill. 60610.

Because of the continuing and growing popularity of barbecued meats and poultry, the objective of this study was to determine what barbecuing methods were being employed successfully by the American food service industry.

The fundamental process of barbecuing had remained relatively unchanged from ancient times. Modern barbecuing operations, however, had been greatly refined and ranged from the simple addition of a tangy sauce to an elaborate thermostatically controlled oven for cooking a small pig. Each operation attempted to bring out natural meat flavor coupled with the flavor and aroma derived from the smoke of burning hardwood. Seven barbecue models were described in detail. Four fundamental principles of barbecuing were also summarized.

165. TRANSIENT HEAT TRANSFER FOR COOKING MEAT WITH INFRARED ENERGY, 1966, Frank D. Borsenik, Carl W. Hall,
Michigan State University, East Lansing, Mich. 43210.

The objectives of this study were to investigate: (1) The influence of infrared source temperatures; (2) the effects of various infrared heat fluxes on the transient processing rates of ground beef. Ground beef was selected because it was fairly homogeneous and it normally represents the average composition of beef products.

Three electric heat sources were used to provide infrared wave lengths from 1.2333 to 3.164 microns, the quartz lamp, quartz tube, and the calrod unit. These heat sources were regulated to provide five heat source temperatures for processing, 4,230.0, 3,465.0, 1,864.5 and 1,648.7R. A range of heat fluxes was used at each of the heat source temperatures. The following were evaluated; Products temperature-time relationships; product processing losses; and heat transfer parameters.

166. TROUBLE-SHOOTING FOOD AND BEVERAGE OPERATIONS,
Matthew Bernatsky, The Cornell Hotel and Restaurant
Administration Quarterly, Vol. 1, No. 1,
May 1960, 8 pages.

This study presents two approaches for solving administrative problems in food and beverage operations. The first is directed to solving surface problems

related to production, layout, and equipment; the second deals with supervision and training.

Dealing with the first approach, consideration is given to analyzing financial statements, menus, food and labor costs, purchasing policies, equipment selection and layout. In presenting the second approach, the human element is considered even more important to a successful operation than the physical layout and equipment, with the manager as the key figure. It is the responsibility of the manager to listen to his department heads and to help them develop a management viewpoint. Department heads should provide on-the-job training so that employees have an opportunity to grow and become more satisfied with their jobs.

167. TURN A SAFETY ENGINEER LOOSE IN YOUR KITCHEN, G. J. Wolnez, Aerojet-General Corp. Reprinted from National Safety News - National Safety Council by Food Service Research Digest, Spring-Summer 1966, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

Convinced that kitchens had accident potentials that were similar to or worse than many industrial shops, safety engineer G. J. Wolnez, and cafeteria manager Mearl Brown at Aerojet-General Corporation's Sacramento plant embarked on a complete analysis of every machine in their kitchen, which had a staff of 39 and fed 4,000 people daily. Following this, a program was embarked on to correct (1) unsafe conditions, (2) unsafe acts of people.

Guards were built and then installed on all equipment requiring them. Eleven such devices were pictured in this report. To control accidents caused by unsafe acts of people, monthly safety meetings were held and augmented by complete safety inspections of every work area, for which a "Food Service Safety Check List" was prepared. A complete set of safety rules and regulations was printed and issued to each employee as well, entitled "General Safety Instructions for Cafeteria Operations."

168. WALL SURFACES: A RESEARCH REPORT ON MINIMUM REQUIREMENTS, Richard A. Compton, The Cornell Hotel and Restaurant Administration Quarterly, Vol. 5, No. 4, February 1965, 22 pages.

The objective of this research was to develop practical testing methods, then to test wall-covering materials and to provide optimum selections for three "use" areas: corridors, office spaces, foyers, and entrances.

The "impact-scuff" test simulated the impact delivered to a wall surface by a moving object. To substantiate the findings, an "actual use performance" test was developed. As a result of these tests, the author recommended that a hard, firm backing be used for all walls subject to any degree of impact. It was also pointed out that wall-covering materials with textile backing were best installed so that the heavier fibers were in the vertical plane. After considering the results of the tests, plus the expected service, life and decorator values, recommendations were made on specific materials for wall-covering use.

169. WHAT YOU A FOOD SERVICE OPERATOR - SHOULD KNOW ABOUT
SALMONELLA, Food Service Research Digest, Summer 1967,
National Restaurant Association, 1530 N. Lake Shore Dr.,
Chicago, Ill. 60610.

Because estimates of the true incidence of salmonellosis have been as high as 1 million to 2 million cases per year, the objective of this project was to compile recent facts and figures regarding the disease from presentations made at the annual meeting of the Food Research Institute held in Madison, Wis., March 1967; from remarks made by Dr. E. M. Foster of the Food Research Institute in May 1967; and from a Salmonella Surveillance Report issued by the U.S. Public Health Service Communicable Disease Center.

There has been an upward trend in spite of far-reaching improvement in food control generally. The chief areas of change which relate to salmonellosis were found in (1) agriculture, (2) food processing, (3) local kitchen practices, and (4) the international movement of foods and feeds. More information has been badly needed on the sources of contamination. For the food service operator, 6 basic steps for preventing food-borne illnesses due to salmonella were given.

170. WORKING WITH CONVENIENCE FOODS TO BUILD A COST-EFFECTIVE
FOOD SERVICE PROGRAM, Institutions Magazine,
February 1968, 32 pages.

Recognizing that the right food and equipment system was the result of a chain of management decisions, and that it had to be open-ended to fit tomorrow's requirements, this casebook for management was focused, not on final solutions, but on these many decision points. It was designed to enable the reader to identify and adopt those approaches that best suit his establishment.

The more than 75 case histories were divided into six sections: (1) Making the right choice in food systems; (2) the impact on food/labor costs; (3) planning facilities for new systems; (4) new directions in distribution; (5) personnel: Easing the transition to new systems; (6) your public.

Additional Reference Sources in This Report Pertaining to Facilities Design and Operational Analysis

In addition to foregoing abstracts, additional information pertaining to the subject may be found in the following abstracts which are presented elsewhere in this report:

Abstract No.Publication Title

2	A Guide to Site Selection
3	A Management Opportunity
15	1966 Eating and Drinking Place Survey Results
22	New Food Service Market: The Old
33	The Food Service Industry: Its Structure and Characteristics, 1966
35	The Market-Feasibility Study In Food Facilities Planning
37	The New Food Service Operation: Programming, Planning and Design Check List
45	A Guide To Floor Toppings
46	A Guide To Indoor-Outdoor Carpets, 1967
52	Artificial Light and Food
55	Carpet Underlays: Performance Characteristics
56	Convenience Systems
57	Discussion on Use of Convenience Foods, 1967
61	Frozen Prepared Foods
79	The Selection and Maintenance of Commercial Carpet
82	Use and Wear Tests of Material Surfaces and Finishes
97	New Developments in Refrigeration
100	Reconnaissance Report On Convenience Foods-- An Introductory Study, 1966
101	Safety and Sanitation Using Frozen Foods
107	Success Formula Food Study
241	Work Instruction Programs For The Food Service Industry

COMMISSARY OPERATIONS

The term "commissary operations" as used in this report is defined as the centralization of food production facilities for two or more, off-premise, food service operations. Such functions as the receipt of raw material, food processing, storage, transportation of finished goods to food service operations, and associated management activities are performed in commissary operations.

Recognition is growing rapidly in all segments of the food service industry that, whether manufacturers, large kitchens, or commissaries are involved, central food processing is bound to grow. Along with a growing trend toward preprepared, centrally prepared and convenience foods in all categories of food service operations, there is an increasing need among manufacturers, producers, and distributors to know what modifications, improvements, and changes in products, equipment, and service will result in the greatest consumer acceptance and gratification, lower costs, and create higher profit potentials.

One participant in this study summarized his judgment in this manner: "Now that the impracticability of aloneness is being recognized by members of the food service industry, lessons should be learned from the U.S. Department of Agriculture--closer, problem-solving and opportunity development collaboration between Government, manufacturers, and operators on broad phases, plus realistic and specific cooperation among manufacturers, wholesalers, and operators. Fear arises that this will destroy individuality, lower the levels of quality, and make standardization mandatory. Electronic data processing not only makes such collaboration possible but also increases the opportunities for individuality tremendously by pointing up the needs that are not being taken care of."

The consensus was that the biggest growth in centrally prepared foods would be among manufacturers and large chains. However, they will need to know more about what fits each operator's needs in terms of recipes, flavors, and costs. They must also learn how operators can individualize products to their desires, because people do not want to eat the same foods everywhere they go. They must demonstrate for small- and medium-sized operators how preprepared and convenience foods hold the answers to many of their problems, plus how their operating habits must be changed to assure success.

Research Gaps

It is recommended that the following research projects be inaugurated in order of priority:

1. A survey of food manufacturers and processors should be conducted to determine optimum order sizes for "convenience foods" produced exclusively for the food service industry. These products would be manufactured or processed by the food manufacturer to the food service operator's specifications.

2. Design and conduct research to determine the minimum and maximum number of food service outlets by type and the sales volume required to justify capital investment for a commissary operation versus purchasing "made-to-order", convenience foods from a manufacturer.

3. Design and test a mathematical model which will determine the economic feasibility of commissary operations. This model should be made available to the entire food service industry. Determine the feasibility of establishing a central data processing center for potential users.

Commissary Operations Abstracts

171. AUTOMATION IN THE COMMISSARY

Restaurant Management, July 1964.

The objective of this report was to research how Hot Shoppes, Inc., used automation in its company, plus: (1) How each restaurant computed its orders from a centralized commissary by a data processing phone line system; (2) how automated systems handled ordering, billing, and delivery information.

Specific advantage over manual systems were described and cost savings were estimated at \$50,000. Each unit had a data transmission terminal connected to its phone set. The information recorded on punch cards was transmitted at electronic speed. Approximately 10 minutes was needed to complete each restaurant's order of about 100 items each day. The commissary had virtually no out-of-stock problems and automatic transmission eliminated the mistakes associated with many verbal orders.

172. ESTABLISHING CENTRAL SCHOOL LUNCH KITCHENS IN URBAN AREAS:

PROBLEMS AND COSTS, 1965, Economic Research Service,
U.S. Department of Agriculture, Agricultural Economic
Report No. 72.

This study was made by the U.S. Department of Agriculture in response to a 1962 request by the Senate Committee on Agriculture and Forestry, and in recognition of a need to expand the School Lunch Program into older urban schools, especially in low-income areas. Findings were based upon information from detailed operational analyses of 8 selected food service systems using central kitchens and listed in the report.

The analyses and reports were designed to: (1) Describe alternative approaches involving central food preparation in providing lunch services to older urban schools; (2) provide indicators from operating experience on organizational facility requirements of a central kitchen approach; (3) make available a systematic procedure by which State and local administrators could evaluate several alternatives for expanding the program to older schools within their systems.

Separate case study reports of the school lunch operations in the 8 school systems were made available upon request.

173. LIQUID NITROGEN FREEZING--COMPARATIVE ECONOMICS AND PRACTICES WITH OTHER FREEZING METHODS, Douglas L. McIntyre, Food Service Research Digest, Spring, 1965, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

This paper was a report regarding a research assignment to develop methods of improving quality and shelf life for a restaurant organization that was operating a central kitchen commissary/bakery. The objective was to freeze bakery and kitchen foods and to ship them frozen to restaurants. Blast freezing was considered but major attention was given to liquid nitrogen freezing.

It was found important that bakery breadstuff products be frozen rapidly and as soon as possible after baking so that only tiny ice crystals were formed and staling prevented. Liquid nitrogen proved to be nontoxic, changed from liquid to gas at minus 320° F., and pulled internal temperatures of food as low as minus 40° F. in minutes. New equipment was designed for the effective use of nitrogen.

174. THE PRESENT STATUS OF FOOD IRRADIATION, Donald K. Tressler. The Cornell Hotel and Restaurant Administration Quarterly, Vol. 1, No. 2, August 1960, 3 pages.

This is a brief report on the potential use of ionizing radiation in food processing. Explanation is made of the types of radiation undergoing study, as well as their advantages and limitations. Six areas of application are presented and the research results of four of these processes are detailed: heat inactivation of enzymes, pasteurization, insect destruction, and sprout inhibition. Mention is made of on-going research to determine commercial applications of ionizing radiation in food processing.

175. WHEN PERT IS MANDATORY, Bohdan O. Suprowicz, Data Processing Magazine, June 1965.

This article explores the usefulness of the concepts of PERT (Program Evaluation Review Technique) planning for the food service industry, especially as large commissaries, airline, and contract systems evolve.

PERT is a formalized system of examining a large process or project, and breaking it into subsections for more critical examination and evaluations. It has been widely used in governmental and industrial projects to improve planning and reduce excess time and total costs. The relationships of electronic data processing, contractors, a PERT working group (systems planners), and other agencies are defined with suggestions on how to develop a PERT program and working group.

Additional Reference Sources In This Report
Pertaining to Commissary Operations

In addition to foregoing abstracts, additional information pertaining to the subject may be found in the following abstracts which are presented elsewhere in this report.

<u>Abstract No.</u>	<u>Publication Title</u>
87	Army Feeding Systems
91	Computerized Quantity Recipe Adjustment and Consolidated Food Ordering for Hospital Food Service Production Section
97	New Developments in Refrigeration
111	A New Role for Microwaves
165	Transient Heat Transfer for Cooking Meat With Infrared Energy
174	The Present Status of Food Irradiation
178	A Procedural Guide for Establishing an Electronic Data Processing System in a Food Service Organization
184	Centralization by Computer

FINANCE AND COST CONTROL

The term "finance" as used in this report is defined as the acquisition of funds for capital investment purposes and the maintenance of general accounting records. Cost control is defined as the media which management utilizes to control such variable expenses as material, labor, and equipment as related to the production of a specific menu item. Cost control should not be confused with current general accounting practice which provides a historical record of assets and liabilities as related to capital investment and statements concerning operating expenses.

Although capital is being made more readily available to large and successful operators, there is little appreciation among operators generally about how volume and cost controls are essential to the best use of capital. Consequently, when considering borrowing money, or seeking investments, operators know relatively little about how others evaluate their business, and how financial assistance can best be obtained.

The realization of minimum operating costs and maximum utilization of capital investment in the food service industry is dependent upon the successful coordination of management and production functions into an integrated system. Unfortunately, the economic impact of a good or excellent system as opposed to a mediocre system is not readily apparent to the average food service operator. The economic impact of a poor system is readily apparent to an operator when he is forced out of business. In 1966, Dunn and Bradstreet reported that the food service industry had more failures than any other category in the retail trade and accounted for 22 percent of all retail business failures.^{3/}

The primary reason for management's inability to evaluate a food service system is the lack of adequate cost controls. Cost accounting techniques which identify the labor, material, and overhead cost to produce a specific finished product, have found relatively small or no acceptance by the industry. The primary reason for this deficiency has been the prohibitive cost involved in determining product costs for a large variety of finished products. The advent of electronic data processing equipment and time-sharing arrangements may possibly lower these costs to an acceptable level. The recent increase in the number of limited menu, specialty-type operations indicates management's desire to obtain better control of the operating costs related to the production of specific menu items.

Although the trend has merely begun, constantly increasing numbers of larger operators are utilizing computers to speed up the availability and accuracy of sales figures, food, labor, and other operating expenses, inventory controls, and profits. The future developments of shared computer services will make such calculations possible for others who cannot afford them now. What the industry needs are standard procedures and programs for various categories of food service operations so that the full benefits of electronic data processing can be realized from the outset.

With the development of electronic data processing, there is a growing tendency among all categories of food service operators to accept the illusion that the use of computers will point up answers to most of their problems. They fail to realize that much depends on what data are fed in; how the resulting tabulations are read, analyzed, and interpreted; and what is done about the findings.

The use of computers could stimulate not only closer controls of costs and financial phases of food service operations, but provide the criteria for planning. These developments could make possible the refinement of total systems that would greatly increase for management the possibilities of marketing and financial success. As the use of computers increases, nonusers will find competition more and more difficult as regards costs and profits. Traditionally, profits in relation to sales in the food service industry have been small. As food service operations are both a production and a service industry, high productivity, high-customer volume, and repeat sales are essential for the most effective use of capital.

^{3/} 1967 Washington Report, Vol. 10, No. 48, 4 pp. National Restaurant Association, Washington, D.C. Monthly Trade Association Paper.

Research Gaps

It is recommended that the following research projects be inaugurated in order of priority:

1. Conduct research to determine the specific cost controls required of an information system to evaluate various types of food service systems. Such factors as volume variance (the projected sales volume by menu item compared with actual sales volume), material variance (food required for production compared with actual usage), performance variance (cost of labor and equipment required for menu production compared with actual usage), advertising variance, and other significant cost factors would be determined.

2. Based on the findings of the foregoing research, design a mathematical model which will provide food service management with meaningful cost control information. The basic production costs developed in the research described in the chapter entitled, "Facilities Design and Operations Analysis", item 1, would be utilized to develop this mathematical model. The feasibility of utilizing electronic data processing equipment versus manual computation will be determined in this research for specific types of food service operations.

3. Test the mathematical model developed in foregoing research, revise and refine as required.

4. For the benefit of operators who cannot afford computer services, research should be conducted to determine what standards and what methods of analysis will be most important for owners, managers, and their accountants in controlling costs and assuring profits. Manuals can then be prepared for their guidance.

5. The sources of capital should be researched (including agencies such as Small Business Administration, and local business and community improvement groups) and case histories publicized for the benefit of small- and medium-sized operations.

Finance and Cost Control Abstracts

176. A "CLINICAL ANALYSIS" OF FIVE BASIC PROBLEMS OF RESTAURANT MANAGEMENT, Business and Technical Advisory Service No. 2, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610. 20¢.

Because most restaurant owners and managers found their work days so filled and the emergencies so numerous, this study was made to determine how symptoms could be recognized, the problems behind them analyzed, and the proper treatments and solutions put into effect. Case histories were assembled and reviewed to supply realistic examples and illustrations.

The five symptoms presented in this bulletin were considered petty problems by many managers, but proved to be accurate symptoms of serious management weaknesses. These were: (1) Idle employees = Poor management planning; (2) Poor employee performance = Lack of organization by management; (3) Over-

production = Lack of coordination by management; (4) Employees can't be trusted : Inadequate supervision; (5) The cook is falling down on the job = Poor control by management. Suggested treatments were detailed for each of these.

177. A COMPILATION OF INFORMATION ON COMPUTER APPLICATIONS IN NUTRITION AND FOOD SERVICE, John P. Casbergue (Editor), June 1968, 102 pages. Division of Medical Dietetics, The Ohio State University, 410 W. 10th Avenue, Columbus, Ohio 43210. \$2. (Payment to accompany order.)

This publication includes references on published materials that relate to computer applications in nutrition and food service. References, some annotated, are from citations and reports submitted by contributors to the Clearinghouse for Information on Computer Applications in Nutrition and Food Service Management at The Ohio State University. References are also from MEDLARS searches (all languages), governmental, and other listings. In addition, the compilation includes known references and/or descriptions of published and unpublished talks and papers, meetings, educational programs, college courses, electronic data processing applications, and research progress reports related to this subject area.

178. A PROCEDURAL GUIDE FOR ESTABLISHING AN ELECTRONIC DATA PROCESSING SYSTEM IN A FOOD SERVICE ORGANIZATION, Jessie S. Brewer, MS Thesis, 1966. Oklahoma State University, Stillwater, Okla. Interlibrary loan.

The objective of this study was to research the planning requirements and normal problems encountered in establishing an electronic data processing system.

The findings were related to food service systems. Problems were described as--insufficient and inaccurate data, a lack of understanding capabilities by food service administrators, and the establishment of single-use applications rather than total system planning. A guide for understanding computer applications was described.

179. AN ANALYSIS OF THE FACTORS CONSIDERED BY COMMERCIAL BANKS IN GRANTING CAPITAL LOANS FOR A PROPOSED RESTAURANT Georgios P. Kostarides, MA Thesis, 1959, 153 pages. School of Hotel, Restaurant and Institutional Management Library, Michigan State University, East Lansing, Mich. 48823. Interlibrary loan.

The purpose of this research was to develop better understanding of banker-borrower relations. A case situation was structured in which the author proposed the purchase of a restaurant. Personal and financial statements were submitted to four banks. In addition, a structured questionnaire was sent to eight other banks to determine the factors used when considering approval of a loan.

The author found that borrowing procedures should include: Presentation of description of the business; detailed inventory of all equipment; proposal for future plans; presentation of financing program; preparation of cash flow and operating budgets. In response to the questionnaire, bankers had five principal considerations: (1) Character of applicant; (2) experience in restaurant field; (3) applicant's training; (4) net worth; (5) real estate which could be used as security.

180. AN ELECTRONIC SYSTEM FOR RESTAURANT CONTROL, Byron L. Carter, Manager, Cash Register Systems Sales, The National Cash Register Co. Report published in Proceedings of 13th Conference, October 1965, Society for the Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610, 31 pages. Xerox copy \$3.10.

The purpose of this presentation was to summarize and illustrate how the company's research in machines and electronic data systems for retailers was adopted to the total operations of five food service operations. The objective was to design a system which would tightly control all facets of a restaurant's operation from ordering, receiving and preparing food to controlling cash at the register and providing management with computerized reports in minutes of time.

Controls were tightened beginning with menu planning (the selection, cost, and preparation of all food items) and then extended to purchasing, receiving (standards, count, pricing), inventories, preparation, portioning, and serving. Work scheduling was related to requirements and reduced personnel problems. Although mainly standardized, each system was modified to meet the operator's specific requirements.

181. AN INFORMATION SYSTEM FOR THE CONTROL OF LOGISTICS IN HOSPITAL DEPARTMENTS OF DIETETICS, P. M. Konnersman, MS Thesis, 1968, 117 pages. Massachusetts Institute of Technology, Cambridge, Mass. 02139. Interlibrary loan.

The problem addressed here was the general one of a logistics information system design for any hospital department of dietetics, rather than some particular department. Covered were all of the operational information requirements in support of the logistics process from ordering to meal-tray distribution.

The logistics problem in hospital departments of dietetics was examined. The most common solutions were considered as a preliminary step to the analysis and semidetailed design for a computer-based information system to control the logistics process. It demonstrated the feasibility of food inventory systems when quantitative data are available. Even though the research was hospital oriented, almost any food service operation, could benefit from the findings.

182. ARE YOU PRICING YOUR MENU CORRECTLY? Joseph B. Gregg,
Cooking For Profit, August 1967, 4 pages.

The objective of this presentation was to research and analyze three principal systems for pricing menu items accurately and to assure profits.

The conclusion was that more than one workable system could be used to price menus accurately. Among them was a comparatively new method called the Texas Restaurant Association Food Cost Formula which permits the operator to price his menu for the profit he desires on a per dollar basis on individual items. Another system was the Prime Cost Method which is based on adding the direct food production labor cost to the raw food cost. A third was called the Modified Conventional Percentage System because it contains a built-in proof of the correctness of menu price that has been decided upon. It was called modified because it depends upon more than unscientific methods used by so many food service operators.

183. CAN DIETARY IMPROVE THE FOOD AND CONTROL THE COST?
John T. Foster, The Modern Hospital, Vol. 108,
No. 6, June 1967.

The objective of Modern Hospital's Food Survey was to measure food and wage costs plus the trends in food preparation and service. A 26 page questionnaire was mailed to 2,000 hospitals in 1967, and brought a 35 percent return. The figures and responses were compared with those of studies made in preceding years.

The most striking finding was the sharp rise in wages for dietary personnel. The average minimum starting wage rose to \$1.35 but ranged from \$1 to well over \$2.50. Hospitals at the lower end of the scale reported the largest increases and wage competition had become prevalent. Food costs were relatively stable. Other trends consisted of extensive capital investments in remodeling and reequipping, popularity of prepared foods, increases in contract food operations and vending.

184. CENTRALIZATION BY COMPUTER. Hospital and Nursing
Home Management, April 1968.

The purpose of this study was to review the long range planning in the Department of Mental Hygiene in New York State regarding the use of electronic data processing in food service operations.

Dietitians prepare menus locally which, when submitted, provide the information for central computerized processing, and result in purchasing, production, and nutrition information for 165 kitchens. Shipping orders are prepared for each unit and sent to supply centers serving these units. Costs have proved to be lower than other decentralized operations. Increased efficiency in food production and service, plus closer control through electronic data processing, improved the economy of the total food service operation.

185. CITY LEDGER ACCOUNTING FOR THE SMALL HOTEL USING
IBM EQUIPMENT, Richard A. Compton, MA Thesis, 1967.
School of Hotel Administration Library, Cornell
University, Ithaca, N.Y. 14850. Interlibrary loan.

Inasmuch as computers were becoming more readily available, more rapid, and less expensive, the objective of this study was to evaluate the practicality of using such equipment in small hotels, especially in city ledger procedures.

After analyzing and comparing manual record keeping with computer systems, the latter offered solutions to many of the problems faced by small hotels. Management was provided with more accurate and rapid billing, with reports of daily activity, plus periodic summaries such as month-to-date, year-to-date, and comparisons with a month or year ago. A master file system allowed the printing of address labels, lists of city ledger accounts, identification cards, and overdue accounts. In addition, manipulation of various information cards enabled management to retrieve historical data for plotting future action.

186. COMPUTERS ARE CHANGING METHODS OF MANAGEMENT IN FOOD SERVICE,
John P. Casberque. Food Executive, January-February 1966.
(Reprinted in the Australasian Hotel and Catering Institute
Journal, March 1966.)

This study reviewed the changing concepts in food service management following the advent of the computer, plus which operational tasks can and have been automated.

Three principal areas were described as evolving with the use of electronic data processing: (1) Improved nutrient information for the dietitian regarding preprocessed and other foods; (2) standardization of food containers; (3) more detailed and accurate purchase specifications. The effects on distribution, plus sales and management activities, were presented. Attention was also given to food facility design simulation and other applications of electronic data processing in food service operations.

187. COMPUTERS TODAY: A NEW REALISM.
Institutions Magazine, March 1968,
12 pages.

The objective of this research was to determine how many food service and lodging operators were using or installing computers, and the extent to which they were utilizing methods of electronic data processing not only for accounting and control functions but also for meeting more effectively management's goals of profit, growth, and development. Case histories recorded included hotel and restaurant chains, individual food service operators, hospitals, universities, distributors, and central computer services systems.

Of the 813 food service operators surveyed in 1967, 22 percent in the non-commercial category were using EDP and 9 percent were installing--20 percent in the commercial category were using and 5 percent were installing. Although

misconceptions of computer costs and complexities continued to exist, the fact was that computers had become most effective management tools and were economically available, especially through shared central computer services bureaus. One participant stated: "The assistance of the computer will make it possible to increase management's position to the point that other companies, using traditional methods, will be unable to compete."

188. CONCEPTS FOR THE FUTURE--SCHOOL FOOD SERVICE AND THE COMPUTER, John P. Casbergue, School Lunch Journal, June 1967.

The objective of this study was to review the computer applications developed in the food service industry and to integrate them into a single system. Using the recipe as a data base, it was found that many information functions generally processed manually or accomplished by intuition or estimation could be processed electronically.

A hypothetical centralized computer system was described that would, via remote terminal processing, handle most information requirements of a regional or State school food service program. The framework would also be applicable for hospitals, unit restaurants, or other multiunit operations. Data requirements were outlined for such activities as computer assisted menu planning, forecasting of costs and nutrient levels of planned menus, food requirements and ordering, receiving and issuing information, production control, cook's recipes, and cost and nutrient computation.

189. COST CONTROL, 1963, Herbert L. Duff of Laventhol, Krekstein, Horwath & Horwath, 41 E. 42nd Street, New York, N.Y. 10017.

Out of varied studies and broad experience in the general food service field, the objective of the author of this paper was to distill for an audience of college and university managers the principles of effective cost controls.

Effective control required a willingness on the part of managers to develop and enforce a systematic program and then to make daily use of the detailed information that was provided, especially in detecting weak spots and taking prompt corrective action. Each step where control was essential, beginning with initial planning, received specific illustrations of strengths and weaknesses. Scheduling and budgeting in every phase of food service were also presented as elements of cost control systems.

190. DOES PERT WORK FOR SMALL PROJECTS? Marchall R. Childs. Data Processing, December 1962.

While PERT (Project Evaluation Review Technique) was most often thought of as a long range project technique, this project was designed to determine what benefits the method could provide for small projects, mainly in more and better information for the user.

PERT was presented as a prescribed approach to planning and scheduling the many tasks necessary to complete a project. PERT charts depicted tasks, intermediate and final goals. PERT helped management to organize information about the future which was otherwise available but required the hard work and time of top management. The benefits and disadvantages were detailed. The conclusion was that PERT could help small projects but the benefits could differ.

191. ELECTRONIC DATA PROCESSING IN INTRA-DEPARTMENTAL FOOD COST ACCOUNTING, Janet Andrews and others. Journal of the American Dietetic Association, October 1967.

This study was made of a data processing system used to determine daily food costs for each unit in a medical center.

The article describes a method of cost control and accounting where food was centrally prepared and distributed to other areas and units. Using recipe data, costs of foods per serving and per pound of each menu item were derived. From this information, a daily analysis of food cost (and income) became available for each service area. Food cost percentage and food costs per patient per day were also computed. Summary reports and analyses provided information for management decisionmaking.

192. FIVE STEPS TO FINANCIAL STRENGTH, Richard K. Rodgers. Fast Food, January 1968, 4 pages.

Drawing on past research and experience, the objective of the author was to develop an outline for effective controls that could be followed by management in determining what business activities could be built into a continuing information system to which the operator could refer to check progress and performance against projections or plans.

Building a sound financial program for a restaurant was judged to be a necessity in the chronically undercapitalized and cash-short food service industry. The recommended program included these five steps: (1) Develop a tailored control system; (2) develop and follow a specific financial plan for profitability and growth; (3) use capable outside fiscal management assistance; (4) improve tax planning and tax management capabilities; (5) build strong banking and credit relationships. Each step was outlined in detail.

193. FOOD CONTROL, 1956, James E. McNamara of Laventhol, Krekstein, Horwath & Horwath, 41 E. 42nd Street, New York, N.Y. 10017.

The objective of this presentation was to draw on the experience of successful manufacturing concerns in using cost accounting systems to know costs throughout the production and distribution processes and then to establish programs whereby restaurant management could obtain the highest possible profit on food sales through day to day control of all costs involved in purchasing, receiving, storing, issuing, menu composition, menu pricing, production, and sales.

Methods of obtaining, recording, and evaluating detailed facts and figures were outlined. Following this, three methods of summary were selected from the several that could be employed: (1) Detailed sales and cost analysis; (2) modified cost analysis; (3) budgetary system of food control.

194. FRANCHISE COMPANY DATA - FOR EQUAL OPPORTUNITY IN BUSINESS,
March 1966, United States Department of Commerce.

Because the Economic Opportunity Act of 1964 gave the Small Business Administration authority to lend up to \$25,000 to persons with very low incomes the objective of this report was to identify nondiscriminatory franchisers. The Department of Commerce neither endorsed nor recommended the firms listed.

The report presented 28 categories of franchisers including drug stores, foods-grocery stores, food-ice cream/candy stores, foods-processing, restaurants, drive-ins/carry-outs/drive abouts, motels, and vending. The franchising program was explained and a 24-question list, "Evaluating A Franchise," was outlined. Included also were lists of U. S. Department of Commerce Field Offices, Small Business Administration Field Office, Operating Small Business Guidance and Development Centers, plus a list of franchising references. In total, 184 franchisers were described.

195. FRANCHISE MANAGEMENT: ITS FAR-REACHING EFFECT ON
FOOD SERVICE, Fast Food Magazine, March 1968, 18 pages.

This study was conducted to analyze what steps the franchise industry had taken in adapting mass retailing techniques (price, locations, product standardization, and merchandising) and applying them to the restaurant business. Thirty-two chains of hamburger specialty restaurants with five or more units were researched and 10 major franchising operations were analyzed in relation to financing, architecture, real estate, training, advertising, and controls.

The biggest influence of franchising has been on marketing. Franchisers found, and profitably catered to, a market that the restaurant industry had generally overlooked--the teenagers and young families. While restaurants historically relied on repeat business, franchise companies capitalized on the mobility and homogeneous tastes of auto-bound Americans. Each franchiser developed a system: carefully selected site, standardized menu, standardized controls, standardized image. Eight principles of franchise operation were also presented.

196. INSURANCE REVIEW . . . FOR RESTAURANT MANAGEMENT.
Business and Technical Advisory Service No. 4,
National Restaurant Association, 1530 N. Lake
Shore Drive, Chicago, Ill. 60610. 20 cents.

There were three objectives to this study to help NRA members: (1) Determine whether current insurance coverage was adequate and was being obtained at the most favorable rates; (2) discover whether these were steps that could be taken to lower risks and some premiums; (3) point out precautions to be

observed with regard to insurance when remodeling, expanding, building, leasing, or purchasing existing facilities.

Presentation was made of factors to be considered when selecting an insurance agent or broker. Detailed methods for reviewing current insurance coverage included: (1) Property: building and contents; (2) business interruption and consequential loss; (3) liability insurance; (4) direct financial and certain other losses; (5) life, accident, and hospitalization insurance. Steps to take when building a restaurant were covered, plus how a safety and fire prevention program may lower risks and premiums.

197. MEASURING BUSINESS PROFITS, Eben S. Reynolds,
The Cornell Hotel and Restaurant Administration
Quarterly, Vol. 4, No. 4, February 1964, 4 pages.

This study expresses the need on the part of management to understand and exercise effective financial control. It is based on the idea that true measure of profitability of a business can be determined only after complete recovery of the investment has been assured and all indebtedness has been paid.

The factors which should be considered in determining the suitability of a projected investment were analyzed, including: (1) Determining the total amount of capital required; (2) deciding what portion of this capital will be borrowed, leased, or provided by owner's investment; (3) estimating the economic life of the property and equipment to be acquired by the capital to be used; (4) appraising the potential return on the owner's investment represented by the net profit of the allowance for recovery of the total capital invested.

198. MEDIAN HOSPITAL MEAL IS 90 CENTS--HAS DATA FROM
504 HOSPITALS, Hospitals, June 1965.

The functions and advantages of Hospital Administration Services were described in detail. This organization provides centralized processing and analyses of operating data. Users receive not only information on their own facilities but also comparisons with similar-sized operations.

Discussion of these reports and their potential uses could be helpful to persons in dietary and food service systems interested in a centralized reporting mechanism or in establishing one.

199. PLANNING A COMPUTER PROGRAM FOR A FOOD SERVICE
DEPARTMENT, Mary R. DeMarco, Hospitals, May 16, 1968.

The objective of this study was to provide a computer program blueprint for a food service department with special emphasis on hospital food service. The master research plan was based on existing computer systems and a projection of future systems.

The plan encompassed the total food service system, and included subsystems related to information about patients, diet orders, menus, recipes,

food order plans, labor, work schedules, equipment, diet therapy, and expenditure control.

200. PROCEEDINGS OF THE FIRST CONFERENCE ON COMPUTER APPLICATIONS IN NUTRITION AND FOOD SERVICE MANAGEMENT, John P. Casberque, Martin D. Keller, Grace Shugart, Victor E. Smith (Editors), The Medical Dietetic Program, The Ohio State University, Columbus, Ohio, July 1965. Available from Clearinghouse, U. S. Department of Commerce, Springfield, Va. 22151. Order Stock No. PB-170944, price \$3.00. (Microfiche 65¢.)

Specific objectives of the meeting concerned the exchange of information and research findings on the application of computer technology to menu planning and nutrition, food production management and service, and design simulation of food service systems. The participants were some of the country's leading researchers in computer-assisted menu planning and management.

Early discussions covered food service systems in a medical environment, but the conference also dealt with computer applications in commercial restaurants, hotels, colleges and universities, military organizations, and other large institutions. There was general agreement that the introduction of computers will come slowly enough to have little effect on the work of most dietitians and food service managers. However, they will be freed of manual nutritional computations, will spend less time on the repetitive tasks of purchasing, inventory control, and cost analysis, and more attention can be given to creative pursuits and decisionmaking.

201. SETTING GOALS FOR AN AUTOMATED INFORMATION SYSTEM, James I. Howell, Hospitals, Journal of the American Hospital Association, May 16, 1966.

The objective of this study was to determine how automatic data processing could be utilized in identifying areas of worker responsibilities, defining the elements in each area, observing overlaps of responsibility, and recognizing worker capabilities.

Three options of planning systems were outlined: (1) Automate present system, which was described as least effective in long run; (2) plan a system based on future needs as well as present requirements, which was considered most effective but difficult and time consuming; (3) plan a system only after analytical overview of procedures to meet specific objectives. Personnel planning and other program requirements were also described.

The report was based on hospital and patient care systems but the concepts are applicable in almost any large organization.

202. STANDARDS AND PROCEDURES REQUIRED TO CONTROL COSTS IN THE MEDIUM SIZED HOSPITAL, Mary W. Schultz, M.A. Thesis, 1967, The Pennsylvania State University, Department of Hotel and Institution Administration, University Park, Pa. 16802. Interlibrary loan.

The purpose of this investigation was to develop a practical approach to the food cost control problems of the medium-sized hospital. The following subjects were considered in relation to food cost control--menu planning, sanitation, layout, purchasing, receiving, storage, issuing, inventory control, production, distribution, sales, and cost accounting.

Criteria for effective food cost control systems were developed as they could be applied to hospitals of 100 to 300 beds. The food cost control procedures employed in a selected hospital of 160 beds were reviewed and evaluated in terms of the criteria developed.

203. STARTING AND MANAGING A SMALL RESTAURANT, 1964, Paul Fairbrook for Small Business Administration. The Starting-and-Managing Series, Vol. No. 9. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. 45¢.

The objective of this study was to help prospective restaurant owners decide whether they had the basic qualifications, financing, and experience for success in the restaurant business. It was intended also to supply some "know-how," help them avoid pitfalls, and build profitable operations after they entered the field. Researched and written by Paul Fairbrook, a nationally known food service consultant, the booklet was prepared under the sponsorship of the National Restaurant Association.

These were the chapter headings selected: (1) Let's take a look; (2) Restaurants you might start; (3) Franchise operations; (4) What is it like to run a restaurant? (5) Are you suited for this business? (6) Do you have the means? (7) Taking the first steps; (8) Where do you plan to locate? (9) Will you buy, lease, or build? (10) Organizing for business; (11) Preparations for the opening; (12) Keys to successful management; (13) Profits through accounting; (14) Building for the future; (15) Other types of food service. An extensive bibliography was included.

204. THE COMPUTER IN FOOD SERVICE, School and College Food Management, April 1968.

The objective of this inquiry was to determine how electronic data processing was influencing the use of space and helping to control costs in school and college food service operations.

This article reports the many ways in which electronic data processing has been demonstrating its value in school and college food service. Automated cashiers at the University of Maryland, for example, resulted in greater speed

with which trays were checked. This brought about a reduction in the number of checkers and cashiers. Overall, computerized accounting and control systems decreased the costs of record keeping 25% to 60% and accelerated more effective and resultful management procedures.

205. UNIFORM SYSTEM OF ACCOUNTS AND EXPENSE DICTIONARY FOR MOTELS - MOTOR HOTELS - SMALL HOTELS, 1963. American Hotel & Motel Association, 221 W. 57th Street, New York, N.Y. 10019. \$7.50.

In view of the size and diversity of the motel/motor hotel/small hotel industry in the United States, research was stimulated under the initiative of the American Hotel and Motel Association to develop a uniform system of comparable accounts so that when reference was made to a particular account all concerned would understand exactly what was meant and accurate comparisons would be possible. The National Association of Accountants was appointed in 1961 to conduct research and to develop this uniform system of accounts.

In the report and manual were presented in detail two basic financial statements: (1) Balance sheet, which set forth the assets, liabilities, and equity of the owners of the business; (2) statement of revenue and expenses, which set forth the revenue, costs and expenses and net operating result for a given period. Explanatory and clarifying comments were made of all categories and terms used.

206. UNIFORM SYSTEM OF ACCOUNTS FOR HOTELS, 6th edition, 1967, Hotel Association of New York City, 141 West 51st. Street, New York, N.Y. 10019. \$4.50.

Since 1926, the continuing objective has been to prepare and keep up to date a uniform system of accounts in a form adaptable to all hotels, including the European plan, American plan, apartment and resort houses. The first edition was prepared by the Accountants Committee of the Hotel Association of New York City and was adopted by the American Hotel Association (now the American Hotel & Motel Association) during that same year. After the printing of the first edition, a Manual Committee of the Hotel Accountants Association of New York City was formed to update the system periodically.

The Uniform System of Accounts for Hotels was designed to serve two purposes. First, it provided a simple formula for the classification of accounts that could be adopted by any hotel regardless of size or type. Second, comparisons were made possible among several hotels or groups of hotels through the use of a standardized uniform method of presenting financial results of operations.

207. UNIFORM SYSTEM OF ACCOUNTS FOR RESTAURANTS, 1968. Laventhol, Krekstein, Horwath & Horwath for National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610. \$7.50.

This project was designed to consider the changes that have taken place in restaurant operations and the related problems that became evident as influences

in the presentation and interpretation of statements since the 1958 text was prepared. Previous editions of the "Uniform System of Accounts for Restaurants" and other published works on the subject of restaurant accounting were also researched.

The basic classification of accounts included again was made to conform to the major elements of operations and financial position. It comprises a grouping of income and cost items in simple summary form that can be used by all restaurants, large and small. This classification emphasizes the major components that portray the operation in a way that provides for intelligent analysis and comparisons.

208. WHAT EXACTLY IS PROGRAMMING, O. E. Bangs,
Cooking for Profit, January 1964.

Programming was described as the thought processes through which we evolve and clarify everything we intend to do, whatever the objective. It consists of assembling and analyzing information to be fed ultimately into the greatest of all computers or data processing machines, the human brain.

Recommendations were made for careful study of present systems and setting long range goals. Flexibility was considered necessary in order to allow for changes as dictated by monetary limitations, locations, and numerous other factors which could affect the general concept of what one was trying to accomplish. Communication with related professionals was stressed when specific plans and objectives were being formulated.

209. WHO'S FRANCHISING WHAT? Fast Food, September 1965.
Reprint also available, Fast Food, 630 Third Ave.,
New York, N.Y. 10017. \$1.

The objective of this study was to determine what companies were franchising food service operations, what principal products were merchandised, at what prices, and who to contact for complete information.

A total of 83 franchising companies were listed under 9 categories...Burgers and Franks, Pancakes, Mexican, Seafood, Steak, Full Menu, Chicken, Pizza, and Barbeque.

210. YOU AND THE COMPUTER, A Student Guide Booklet,
General Electric Company, Educational Relations,
Schenectady, N.Y. 12305.

This 21 page booklet dispels many of the so-called mysteries of electronic data processing (EDP) in a straightforward and interesting fashion. It is non-technical and touches on most basic concepts of EDP--the binary numbering system, and the various types of input, output and storage devices.

Additional Reference Sources In This Report
Pertaining to Finance and Cost Control

In addition to foregoing abstracts, additional information pertaining to the subject may be found in the following abstracts which are presented elsewhere in this report:

<u>Abstract No.</u>	<u>Publication Title</u>
8	An Earnings Report For Fifty Selected Restaurants
9	An Outlook For the Food Service Industry
12	Charting the Financial Route to Successful Restaurant Operation
15	1966 Eating and Drinking Place Survey Results
16	Economic Factors and Case Studies In Hotel and Motel Valuation
26	Significant Trends in the Motel and Motor Hotel Industry
33	The Food Service Industry: Its Structure and Characteristics
35	The Market-Feasibility Study in Food Facilities Planning
42	The U.S. Eating-Out Market
43	Trends in the Hotel-Motel Business, Annually Since 1939
51	Applications of Data Processing to Dietetics
53	Aspects of Using Frozen Pre-Packed Entrees In A Commercial Hotel Food Department
56	Convenience Systems
67	Medical Dietetic Students Plan Menus with Computer Assistance
69	Menu Planning by Computer: The Random Approach
72	"Ready" or not? Purdue Tested Both Methods

Abstract No.Publication Title

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| 89 | Computer Provides Instant Updating of Perpetual Inventory at Missouri Medical Center |
| 90 | Computer Recipes in Quantity Production |
| 91 | Computerized Quantity Recipe Adjustment And Consolidated Food Ordering for a Hospital Food Service Production Section |
| 95 | Expenditures for Processed Foods By Employee Food Services in Manufacturing Plants |
| 107 | Success Formula Food Study |
| 118 | Commercially Pre-Prepared Frozen Entrees |
| 119 | Computer Model For New Product Demand |
| 120 | Computers In The Food Service Industry |
| 121 | Convenience Foods: A Program For Today and Tomorrow |
| 127 | Digital Computer Simulation of a Cafeteria Service Line |
| 140 | Ideas Are Food For Thought in Food Service Planning |
| 144 | Labor Utilization and Operating Practices in Commercial Cafeterias |
| 145 | Layout, Equipment, and Work Methods for School Lunch Kitchens and Serving Lines |
| 157 | The Application of Mass Production to a La Carte Food Service Using Prepared-to-Order Food |
| 161 | The Lankenau Study |
| 166 | Trouble-Shooting Food and Beverage Operations |
| 170 | Working with Convenience Foods to Build A Cost-Effective Food Service Program |
| 175 | When PERT is Mandatory |

Abstract No.Publication Title

211	A Study of Personnel Practices and Trends In Labor Costs Among Successful Restaurants
221	Industry Wage Survey - Eating and Drinking Places
223	Managerial Salaries In the Food Service Industry
*225	(See below)
233	The Case Against Management
235	The Study of Financial Management by Executives In The Service Industries

*Measuring the Benefits of a Sales Training Program Sponsored by the Indiana Restaurant Association and a Survey of Training Programs In Other State Associations.

PERSONNEL MANAGEMENT

The term "personnel management" as used in this report is defined as recruiting, training, compensating, and retaining both hourly and salaried employees. Such factors as employee evaluation and impact of working environment upon productivity are considered as a part of personnel management.

There is general agreement that much is being learned about the psychological factors which managers need to produce desired results. One successful operator who is now a prominent educator, said, "I am in the process of determining how the newer concepts and procedures of administration, interpersonal relationships, developing and applying realistic marketing objectives, and earning greater profits can be utilized not only in training future managers but also can be adopted by present owners and managers who realize only dimly that this wealth of insight and experience exists." The management development programs conducted by our colleges and some consultants are utilizing this knowledge in preparing managers to cope successfully with present problems and emerging needs. The big letdown occurs when graduates take jobs; they are forced to fit into established policies and routines. This may seem practical, but, in our rapidly changing times, this procedure does not take full advantage of the graduate's skills in improving operations and in innovating toward greater consumer satisfaction and profits.

The dean of one of our universities said, "With operators, the challenge is to make them good administrators. In our own seminars and workshops, and in those conducted by associations, more emphasis should be placed on principles

and problem-solving. In small group sessions, active participation should be mandatory. Most operators think in terms of specifics. They should be stimulated to think and plan within a framework of the objectives and fundamentals involved."

Among electronic data processing specialists, there is fear that food service managements are expecting too much of computers in shaping decisions for them. Another materializing fear is that managements are becoming deluged with figures, and confusion results from their inability to interpret them. On the positive side, computers are making managements realize that they are industrialists and must perform as production, service, and marketing professionals.

There is general agreement that food service managements of the future will focus less on imitative or individualized methods but will devote more thought to objectives and more energy to creative procedures for accomplishing them. They will then program these into operating systems. However, there is little understanding of what fundamentals, plus what insights, knowledge, and skills will be involved. Without such a framework, managements cannot achieve (except by chance) the maximum effectiveness and profits, plus the professional stature, they aspire.

Food service still suffers from the stigma of being a "servant" industry. Another drawback is that hourly employees in many profitmaking operations have to obtain a large part of their compensation from tips. The number of adequately trained chefs and cooks is decreasing steadily and in the foreseeable future will drop even more. The result, especially in the profitmaking segment, is that many persons choose cooking and food service as a last resort. While strenuous efforts are being made to correct this situation, management still has to rely most heavily on tradition and experience, or adopt one of the many theories or programs of selection and training that are in the process of being developed.

Two attitudes still predominate among food service operators (outside of dietetics); they are (1) that management has to hire people it can get and (2) that psychological tests and skill evaluations will single out individuals who will prove to be successful. To highlight the fallacy of the first point, one small chain in the Midwest, along with a handful of others, has young people clamoring to work for them. They have accomplished this by hiring mainly young people, training them to serve customers graciously, giving them a voice in supervision and operation, and paying above average wages with incentives included. The second approach has worked only for those who carried participation, sound supervision, and continued skill development beyond the hiring and initial training stage.

There is crystallizing a conviction that the physical work environment affects the quality of finished products, productivity, costs, motivation, skill development, and turnover. Attention should be given to methods by which kitchen and worker environment can be made most acceptable and help to maximize interest and productivity. Even though increasing attention is being given to work methods because of standardized recipes, portioned and convenience foods, and so forth, few studies have been made of how people can be motivated, trained, and supervised to produce top quality foods, and with proper incentives, enjoy doing this over long periods of time.

Training programs will be more effective when manufacturers and distributors of foods, equipment, utensils, sanitation materials, and so forth, become more expert in communicating instructions to individual operations. Merely making imitators or robots of people and neglecting understanding and relationships leads inevitably to indifference and dissatisfaction.

The Council on Hotel, Restaurant, and Institutional Education is conducting research to determine how people are stimulated and motivated to choose a role in food service as their work or profession. In addition to this, considerably more should be learned about why people at all levels change so frequently from job to job within the industry and eventually leave to take something else. Just how much job satisfaction is there in food service? What are the personal attractions and gratifications? What are the futures in the industry for young people who come into it now?

All food service industries must conduct a far more effective program in promoting their present and future image. Likewise, tests and measurements should be related to future needs rather than to past experience. This applies to measures of intelligence, manual dexterity, interest in others, communication, human relations, and so forth. In relation to future managers, how enterprising, innovative, creative and organization-minded are they? The fast changes we are living with requires considerable objectivity, creativity, skill and drive for the realization of these objectives.

Research Gaps

It is recommended that the following research projects be inaugurated in order of priority:

1. In-depth research studies of successful food service operations should be made with the collaboration of social scientists to determine what attributes a good manager, supervisor, waitress, or cook should possess (the output) and what input is required (I.Q. levels, personal characteristics, etc.). The input will serve as guidelines for recruiting personnel. Analyze the characteristics of people available in the labor market and design training programs which supply the required skills. Develop the feedback or monitoring subsystem necessary to evaluate the training program. Once such systems are developed, the National Restaurant Association, American Hotel and Motel Association, State and local associations, and colleges can provide valuable services to food service operators, the majority of whom do not have the time, and/or resources now to conduct and evaluate effective training programs.

2. Research how the handicapped can best be selected and trained for effective services in the industry and how operators can be encouraged to employ them.

3. Study and evaluate training methods that have been prepared for the benefit of the food service and other industries. Determine how the successful training methods of other industries may be revised and/or adopted to meet the needs of the food service industry. Outline the principles and detailed procedures to be followed by creators of training programs to design specifications conducive to the development of skills and talents.

211. A STUDY OF PERSONNEL PRACTICES AND TRENDS IN LABOR COSTS AMONG SUCCESSFUL RESTAURANTS, George D. Bedell, M.A. Thesis, 1963, 68 pages. School of Hotel, Restaurant, and Institutional Management Library, Michigan State University, East Lansing, Mich. 48823. Interlibrary loan.

This study, based on 116 questionnaires covering the experience of 427 restaurants employing over 24,000 people, was devoted to understanding the philosophy of management as reflected by personnel practices. It had five objectives, to (1) identify major personnel problems, (2) examine the turnover problem, (3) study the training offered, (4) compute wages and salaries, and (5) examine labor costs.

As viewed by management, the three major personnel problems were a shortage of employees of satisfactory caliber, lack of motivation, and development of supervisory personnel. Six out of ten employees were replaced each year--38% left and 27% were discharged. Although 90% of the respondents thought training programs valuable, only 24% had complete programs. Management training was considered not as developing operating skills but as training in planning, directing, and controlling and in moving toward specific objectives.

212. A STUDY OF THE TEACHING PROCEDURES USED IN A QUANTITY FOOD PREPARATION COURSE, Jack R. Storms, M.A. Thesis, 1966, School of Health Administration Library, Cornell University, Ithaca, N.Y. 14850. Interlibrary loan.

The objective of this study was to learn through direct participation what strengths and shortcomings were inherent in a specific quantity food preparation course. The differences between the use of a limited and an unlimited menu were measured for value comparisons.

After participating in the operating program ranging from menu preparation and recipe selection, to food service, merchandising, and management, the following conclusions were reached: (1) In regard to the limited menu vs. the unlimited menu, the latter worked out better because consumer satisfaction was greater and profits increased; (2) the best promotion was through word-of-mouth advertising; (3) in dealing with employees, the manager always had to be alert, explain acceptably, and never leave one department entirely to its own resources. The practical operating experience added depth and richer meaning to the courses studied.

213. A SYSTEMS APPROACH TO THE MECHANISMS OF LEARNING, John M. Welch, Ph.D. Extension Economist, University of Missouri. Report presented at 16th Conference, April 1967, Society for Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610, 26 pages. Xerox copy \$2.60.

This report summarized the research conducted to outline the functions of management in relation to manpower. The study analyzed management decisions in

relation to: (1) What training is needed; (2) why there should be a training program; (3) where to obtain people to train and the materials and methods to use; (4) when the training should be given; (5) who will give the training required; (6) how much training to give, and how much it will cost.

Management was defined as getting things done through people and that accomplishing this depended on taking time to plan, organize, direct, supervise control, coordinate, present, and evaluate the enterprise to make the most efficient use of manpower, money, materials, methods, and machines. Each factor was presented with detailed explanations and examples.

214. ATTITUDES AND BEHAVIOR CHANGE IN THE FOOD SERVICE INDUSTRY, Leonard E. Zehnder, Ph.D. Dissertation, 1966, College of Education, Michigan State University, East Lansing, Mich. 48823. Interlibrary loan.

The purpose of this study was to show that it is theoretically and practically possible to include attitude development into occupational course content. The research centered on inadequately developed occupational attitudes and what education and industry can do to alleviate the problem. The research revealed that a legitimate basis existed for the inclusion of attitude development into vocational education programs and that attitudinal aspects of job training are being unnecessarily neglected in existing educational programs.

The dissertation developed a procedure for analyzing attitudes and specifying these to serve as educational objectives for a training program. The technique was demonstrated by a pilot study of two jobs in the food service industry. The female cook and waitress positions were used to illustrate how the attitudinal requirements for a job can be identified, measured, and specified in the same manner as other skills are for vocational training.

215. DIALOGUE TECHNIQUE FOR WAITRESS TRAINING, Dianne A. Heuston, MA Thesis, 1962, 246 pages. School of Hotel, Restaurant and Institutional Management Library, Michigan State University, East Lansing, Mich. 48823. Interlibrary loan.

The purpose of this study was to examine the dialogue techniques as a training method for waitresses. Five objectives were researched: (1) Creating a feeling of involvement with the aims and goals of management; (2) developing a willingness to give gracious service; (3) encouraging constructive suggestions and creative thinking about job performance; (4) instilling a desire for personal improvement; (5) stressing the importance of sound sanitation practices in handling food. A total of 41 waitresses in a 290 seat restaurant were studied over a 5-month period.

Every waitress who completed the program showed some improvement, the highest being 37% in overall job performance. A rating sheet was devised and an instruction guide developed. The instruction guide made the waitresses' supervisors more able in their own jobs by showing them what to look for when they were supervising.

216. EMPLOYEE ATTITUDES TOWARD PERFORMANCE APPRAISAL,
Helen A. Stafford, Marie E. Knickrehm, and
Harrison M. Trice, Journal of American Dietetic
Association, January 1966, 5 pages.

Performance appraisal programs were studied to test for certain rating errors which may adversely affect the discriminatory value of supervisory ratings and to assess the motivational value of these ratings for food service employees. The method adopted for this purpose was the Q-technique.

217. FOOD SERVICE INDUSTRY TRAINING PROGRAMS AND FACILITIES, 1961.
Office of Education, U.S. Department of Health, Education, and
Welfare, OE No. 82007. For sale by Superintendent of Documents,
U.S. Government Printing Office, Washington, D. C. 20402. 65 cents.

The objective of this study was to research food service training programs, teaching materials, and methods, to provide vocational educators with an appropriate guide for training personnel to better serve the public. The resulting publication represented a cooperative effort of the National Restaurant Association, the American Hotel and Motel Association, and the Distributive Education Branch of the Division of Vocational Education.

These were the chapter headings selected: (1) Scope of the food service industry; (2) functions of a food-service operation; (3) salesperson's role in meeting objectives; (4) qualifications for successful sales work; (5) opportunities in sales work; (6) work in a service unit; (7) work in a self-service unit; (8) summary of responsibilities; (9) training methods and aids. All were developed in considerable detail and the numerous teaching suggestions were made very specific.

218. FORMAL PERFORMANCE APPRAISALS OF FOOD SERVICE MANAGERS,
E. Bruce Kirk, The Cornell Hotel and Restaurant Administration
Quarterly, Vol. 3, No. 3, November 1962, 6 pages.

This is a report of a 2-year study by Slater Food Service Management to determine the effectiveness of its performance appraisal program for food service managers. A 3-page questionnaire was sent to over 200 managers whose performance had previously been appraised and discussed.

The principal conclusion was that, through the performance appraisal discussions, most managers got a clearer picture of their own jobs and their relationships with their supervisors. Moreover, the discussions encouraged, stimulated, and helped most managers to do a better job. Also described was how supervisors were trained to conduct performance appraisals and some of the factors suggested for improving performance. Ten case synopses of supervisors' reports on division managers were also included.

219. HOW TO DEVELOP A SYSTEM OF EMPLOYEE TRAINING IN FOOD SERVICE ORGANIZATIONS, Pope's Cafeterias, Inc., 805 St. Charles Street, St. Louis, Mo. 63101.

This study was designed to review briefly the history of training employees for the food service industry and to analyze the experiences of Pope's cafeterias in recruiting and developing personnel for their own operations. The frame of reference throughout the project was that training programs must help even the person with the least skills to perform specific jobs.

It was found that most people seeking jobs in food service did not have basic preemployment skills, which made training most difficult. Yet, people in the food service business had not applied the fundamentals that had long been used successfully in other industries. The Pope program began with teaching supervisors and managers to indoctrinate and train new employees at each unit. Trainees were then sent to the main office, at company expense, for viewing of the basic job program and other related slide-sound programs and movies. The training program was looked upon as a never ending process.

220. HUMAN RELATIONS IN THE RESTAURANT INDUSTRY, William Foote Whyte, The Cornell Hotel and Restaurant Administration Quarterly, Vol. 4, No. 3, November 1963, 21 pages; Vol. 4, No. 4, February 1964, 11 pages; Vol. 5, No. 2, August 1964, 11 pages.

These articles were parts reprinted from the author's book of the same title which reported the results of research designed to: (1) Add to basic knowledge regarding human relations in industry; (2) provide materials of practical value to supervisors and managers of restaurants. Intensive interviews and observations were conducted in 12 Chicago area restaurants, supplemented by interviews in 13 other establishments with supervisors and managers.

The principal conclusion was that success in the restaurant business required a delicate adjustment of supply to demand, skillful coordination of production and service, and to accomplish this, the restaurant supervisor required a high order of skill in human relations. The only hope for management in solving its personnel problems was in the understanding that a restaurant operation was an evolving system of human relations.

221. INDUSTRY WAGE SURVEY--EATING AND DRINKING PLACES, June 1963, Bureau of Labor Statistics, United States Department of Labor, Bulletin No. 1400.

The survey was conducted at the request of the Wage and Hour and Public Contracts Divisions to facilitate the preparation of a report required under Section IV-D of the Fair Labor Standards Act.

This bulletin summarized data obtained on the distribution of employees by wages and hours of work. It also provided information on the incidence of such supplementary wage practices as paid holidays, vacations, and health, insurance, and pension plans. Detailed information on the wages of workers in selected occupations was presented separately for 24 large metropolitan areas.

222. JUNIOR COLLEGE PROGRAMS FOR THE HOSPITALITY FIELD, 1962,
John M. Welch, from Ph.D. Thesis, Council on Hotel,
Restaurant, and Institutional Education, Statler Hall,
Ithaca, N.Y. \$1.

The four purposes of this study were: (1) To examine the educational needs of the hospitality industries in the State of Florida; (2) to examine in detail the offerings of a representative sample of junior and 4-year colleges, and to compare these curriculums with recommendations of CHRIE; (3) to discuss possible programs for educating potential management personnel in the hospitality industries at junior college level; (4) to suggest pertinent additional research. Curriculums of 12 universities and colleges were studied and their adequacy and appropriateness evaluated in relation to the needs of the hospitality industry.

Since the hospitality industries were the third largest contributors to the tax revenues of Florida, they were considered entitled to more support than they had received. With proper planning and coordination as outlined, a system of vocational training was considered practical when developed through existing and proposed junior college, university, and university extension systems. This program was judged possible at minimum cost.

223. MANAGERIAL SALARIES IN THE FOOD SERVICE INDUSTRY,
Peter D. Streuli, The Cornell Hotel and Restaurant
Administration Quarterly, Vol. 3, No. 3, November 1962,
9 pages.

The objective of this study was to determine the various salary levels and related benefits for management personnel and dietitians in the food service field. A total of 284 questionnaires were mailed. Of the 273 questionnaires returned, 80 (34.5%) were sufficiently complete to be included in the study. These represented a total of 8,078 units, and ranged from snack bars to several dining rooms in one unit.

The highest salaries were paid to restaurant managers, and starting salaries were highest among management trainees who graduated from college with degrees in hotel and restaurant administration. The better paying positions included fringe benefits, the most common being life insurance, hospitalization, and profit sharing. Paid vacations ranged from 1 week for new employees to 3 weeks or more for managers with several years of experience. As for dietitians, salaries were comparable with those of assistant managers and executive managers in the large food operations.

224. MANPOWER AND EDUCATION FOR THE FOOD SERVICE INDUSTRY,
1967, National Restaurant Association, 1530 N. Lake Shore Drive,
Chicago, Ill. 60610.

The objectives of this conference were to explore: (1) Shortages of trained workers in the food service industry as expressed by employees, unions, professional organizations, and educators; (2) questions about developing changes in technology, occupational structure, and employment patterns; (3) questions about the so-called "image" of the food service industry, and its

relationship to the growth of the industry as well as the productivity of personnel employed.

Quality rather than numbers was given as the principal manpower need. Improvement was considered dependent upon the upgrading of education and training. Management was charged with the economical and efficient use of all human resources, and cooperation was considered essential for the improvement of programs. A National Institute for the Food Service Industry was considered essential for upgrading personnel as well as the "image" presented to the public.

225. MEASURING THE BENEFITS OF A SALES TRAINING PROGRAM SPONSORED BY THE INDIANA RESTAURANT ASSOCIATION AND A SURVEY OF TRAINING PROGRAMS IN OTHER STATE ASSOCIATIONS, John P. Casbergue, MA Thesis, 1961, 58 pages. School of Hotel, Restaurant, and Institutional Management Library, Michigan State University, East Lansing, Mich. 48823. Interlibrary loan.

To evaluate training in increasing sales effectiveness, a sales training program created by Indiana University and the Indiana Restaurant Association was selected. The lecture-discussion method was used. The check average of each waitress was chosen as the measure of sales ability. In three restaurants, 2-week observations were conducted immediately preceding and following the training programs.

A comparison of pretraining and post-training check averages showed increases of 8.35%, 9.72%, and 4.42%. Substantial increases of 24.33% were found in one operation for beverage check averages. It was shown that management could rapidly recover the money invested in training and easily assess improvement or loss of sales effectiveness. A survey of training programs used by 33 other State restaurant associations was included in the report.

226. MOTIVATION AND PRODUCTIVITY IN MIDDLE MANAGEMENT, Edward C. White, V.P., ABC Gladioux Corp. Report presented at 16th Conference, April, 1967, Society For Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610, 16 pages. Xerox copy \$1.60.

This report covered the experience of one company that initiated and coordinated an education program for middle management that was geared to motivation and productivity. The objective was to develop purposeful leadership from the top down and to increase performance through effective communication.

The three fundamental steps that resulted from the analysis of management problems and needs were: (1) Reorganization of training program toward more definite goals; (2) improvement of recruiting techniques; (3) creation of a more favorable corporate climate. Programs of selection and training were developed with the cooperation of vocational schools and colleges, and then elaborated in gratifying on-the-job training and supervision.

227. PERFORMANCE EVALUATION FORM FOR FOOD SERVICE EMPLOYEES,
Jeanne L. Tillotson and Joanne Styer, Journal of the
American Dietetic Association, Vol. 47, October 1965.

This project was designed to provide hospital dietitians with a rating form specifically designed to evaluate the performance of food service employees. The method used was based on determining the requirements for successful job performance through ascertaining the behavior of workers on the job. The incidents were then analyzed so that behaviors vital to job success could be determined and put into useful form.

Thirteen characteristics were used (on a 5-point scale): Cooperation, adaptability, interest in doing a good job, initiative, following directions, maintenance of food service standards, housekeeping, attention to detail, relations with supervisor, sensitivity to needs of others (patients, patrons), personal appearance, personal conduct, dependability.

228. PRACTICE AND PROCEDURE OF THE N.L.R.B. AFFECTING THE HOTEL
INDUSTRY, Benjamin B. Naumoff, The Cornell Hotel and
Restaurant Administration Quarterly, Vol. 1, No. 3,
November 1960, 3 pages.

The purpose of this study was to review how the National Labor Relations Board operates and to present the rulings resulting from hotel labor problems. Two major functions of the Board were explained: (1) Prevention of unfair labor practices on the part of both employers and unions; (2) To determine whether the employees desire to be represented for collective bargaining. Five rulings were then examined to indicate how the Board dealt with units of employees in the hotel industry.

229. PREPARING TEACHERS AND INSTRUCTIONAL MATERIALS FOR THE FOOD
SERVICE OCCUPATIONS, Report of an Experimental Workshop Held at
Michigan State University, August 2-11, 1965, Education Publication
Service, College of Education, Michigan State University,
East Lansing, Mich. 48823.

The specific objectives of this study were to: (1) Analyze the nature of occupations in the areas of food production, sales, and service; (2) understand the competencies expected of workers in food production, sales, and service occupations; (3) recognize the characteristics of workers who select food service occupations; (4) develop instructional outlines and materials suitable for use with students of various ability levels; (5) understand methods suitable for instruction in food service occupations; (6) develop desire to gain further education and skill in teaching, supervising, and coordinating programs in training for food service occupations.

The workshop concept appeared to be a feasible means of preparing teachers and materials. To meet comprehensive needs, it seemed advisable to utilize a workshop as an initial activity in teacher education followed by a sequence of inservice training conferences.

230. PROBLEMS OF ADJUSTMENT IN THE AUTOMATED OFFICE,
Arlen Gray, Personnel, July-August 1964.

This study was designed to explore why the advent of electronic data processing into office operations has seldom been smooth sailing from the employee relations standpoint, and to determine the specific pitfalls, plus what preventive measures and considerations help to guard against them.

The computer is sometimes considered an easy means to eliminate dull, repetitive jobs and replace them with interesting, high-prestige positions. As systems become more complex, the employee's tasks may be more demanding in terms of accuracy, speed, and constant alertness. An uninformed person becomes insecure and such reactions must be considered in planning transitions and changes. The failure to practice known communication principles is cited as a major breakdown in preparing people for EDP with disappointing results in installing expensive equipment.

231. RESTAURANT TRAINING, John M. Welch and Coolie Werner,
The Cornell Hotel and Restaurant Administration Quarterly,
Vol. 3, No. 1, May 1962, 5 pages.

This study was designed to determine the effectiveness of two processes for communicating knowledge: (1) A conventional group method termed a "Restaurant Management Clinic," and (2) mailings of an extension circular. The criterion was the rate of adoption of recommended practices. Following the "impact" period of 2 months, a personal interview survey was made.

After analyzing results, the use of the clinic was significantly better in securing adoption of recommended practices. In analyzing the personal characteristics of the respondents, those with the higher socioeconomic status tended to be better adopters of new trade practices. Social participation was not a significant factor for those who sought knowledge but it had some importance as a possible source of information for those who did not. The level of education was an important factor in adopting new trade practices.

232. STATUS OF CURRICULUM DEVELOPMENT IN THE FIELD OF COMMERCIAL FOOD AT THE NON-BACCALAUREATE LEVEL, Mildred B. Barnard and Hilda Watson Gifford, 1967, Council on Hotel, Restaurant, and Institutional Education, Statler Hall, Ithaca, H.Y. 14850.

The objectives of this study were to: (1) Locate existing programs of training for food preparation and service and to collect and review their statements of philosophy and patterns of organization; (2) collect instructional materials now used; (3) study programs of six selected high schools representing four approaches to this type of training; (4) prepare suggested organizational patterns for schools planning to develop programs; (5) survey instructional practices employed and make them available to interested schools.

At least 37 institutions were offering training in commercial food. There were some excellent programs in operation at the high school level, most of which needed help as a result of increasing demands made upon them. Teachers

trained specifically for the industry were desperately needed. Adequate time for group planning, for curriculum development, for arranging publicity, for self evaluation was the need most frequently expressed by those involved.

233. THE CASE AGAINST MANAGEMENT, Travis Elliott.
Fast Food Magazine, October 1967, 5 pages.

The objective of this report was to determine why, in 1966, employee turnover in the restaurant industry was more than 200%, why the loss and replacement of a restaurant worker cost \$200 to \$500, and why this turnover totaled more than \$900,000,000 or 4.5% of sales. Employees moved from just one restaurant to another. Workers gave evidence of frustrating dissatisfaction, and absenteeism and tardiness were unusually high.

The principal contributor to employee turnover was found to be the gap between what management believed workers wanted and what they really needed. Management placed pertinent factors in the following order: (1) Good wages; (2) job security; (3) promotion; (4) good working conditions; (5) interesting work. Workers themselves listed them thus: (1) Appreciation for my work; (2) being "in the know" of things; (3) sympathetic understanding of personal problems; (4) job security; (5) good wages. Recommendations are given regarding how this gap can be reduced.

234. THE MENTALLY RETARDED BOY IN THE RESTAURANT BUSINESS,
Carl Jacobson, MA Thesis, 1961, 84 pages, School of
Hotel, Restaurant, and Institutional Management Library,
Michigan State University, East Lansing, Mich. 48823.
Interlibrary loan.

This study was devoted to the formulation of a vocational training program for mentally retarded boys to prepare them for employment in the restaurant industry. This industry was chosen because three essentials were considered necessary for a suitable sphere of employment: (1) A large industry in sales and employment; (2) afforded opportunities for boys with limited abilities; (3) would be practical for a training program in public schools. Thirty restaurant operators in the Detroit area were interviewed regarding hiring mentally retarded boys, and, if hired, for what positions.

The answers were unanimous for positions of bus boy, porter, and kitchen helper. A 35-week course of study and training was developed, and the position of dishwasher was included. Added to these were the results of two previous attempts to place mentally retarded boys in Detroit restaurants. Even without training, 50% of applicants were given regular, full-time employment.

235. THE STUDY OF FINANCIAL MANAGEMENT BY EXECUTIVES IN THE SERVICE INDUSTRIES, Eben S. Reynolds, MA Thesis, 1962, School of Hotel Administration Library, Cornell University, Ithaca, N.Y. 14850. Interlibrary loan.

This thesis examined the subject of financial management as an essential skill needed by the managers of establishments in the field of public hospitality. Observations were made of the responsibility of managers in relation to dollar volume handled and numbers of financial specialists. The high rate of commercial failures was also researched.

One of the principal findings was that only a very small percentage of the men and women in the food service and hospitality industries had received adequate formal training to cope with the complex problems involved in successful financial management. Subject matter and teaching techniques were outlined which could provide experience through concentrated workshops covering major phases of financial management.

236. THE U.S. ARMY FOOD SERVICE PROGRAM AS IT PERTAINS TO COOKS, John J. Bilon, MA Thesis, 1957. School of Hotel Administration Library, Cornell University, Ithaca, N.Y. 14850. Interlibrary loan.

Because the U.S. Army could be an important source of cooks for the food service industry, and (as a morale builder to servicemen) the preparation and serving of wholesome food could be a motivating challenge, this study was made to determine why so few of these cooks were employed in food service after their periods in the Army.

Of 300 men on kitchen duty who completed questionnaires, 66% did not want to go to cooks' school. The large majority of food advisers and food service officers indicated that more effective selection methods were required. They also recommended that the length of training time be extended and that more helpful and intensive supervision be provided. They also suggested that teams be established to demonstrate proper preparation and use of spices, garnishes, gravies, and frozen and dehydrated foods. Their conviction was that a planned program would raise standards of food served in the Army mess halls and encourage cooks to make a career of cooking following service.

237. TOTAL INVOLVEMENT OF PERSONNEL, William T. Camp, Personnel Manager, Manners' Family Restaurants. Report presented at 16th Conference, April 1967, Society For Advancement of Food Service Research, 1530 N. Lake Shore Drive, Chicago, Ill. 60610, 10 pages. Xerox copy \$1.

This report recorded the problems that developed in a family-managed restaurant business with the acquisition of a franchise in 1954, and the expansion that followed. After a personnel department was established in 1961, a continuing study was started to determine the effects of changes in personnel policies and practices. Based on initial research findings, a psychologist was retained to study the needs in depth and to recommend a personnel program.

The objective of the comprehensive personnel program was to maximize the involvement of all people in the company's varied operations. This began with regular employee meetings under the direction of each unit manager. Subsequently, a Hospitality College was established. Following the success of a charm school course for female employees, retraining sessions were set up for service, cook and sanitation personnel, and these were climaxed by 10-week management and continuing development programs.

238. TRENDS IN UNION-MANAGEMENT RELATIONS, Robert A. Beck,
The Cornell Hotel and Restaurant Administration Quarterly,
Vol. 1, No. 3, November 1960, 4 pages.

This study of union-management relations traces the development of unions in the hospitality industry beginning with the first attempts to organize through the various Federal labor acts up to the present. Analysis is made of what management might expect from the unions in the next 1 to 5 years.

Prediction was made that management will be faced with demands for higher wages, shorter hours, and other fringe benefits, as well as increased efforts to amend the minimum wage law to include workers in the hospitality industry. Because of the profit squeeze, the author concluded that union officials must begin to recognize that there is a point beyond above which the hotel man cannot go. As the prices of rooms, food, and beverages approach a level at which they meet an overpowering resistance on the part of the guest, "cooperation, not resistance, will have to be the byword of the unions."

239. TUNING IN ON EMPLOYEE GRIPES, Fast Food Magazine,
October 1967, 7 1/2 pages.

The study (although actual name was not given) was conducted by a restaurant chain that, between 1962 and 1966, had almost tripled in size. A manager training program had stabilized the effectiveness of the managerial force. However, the turnover and shortages of hourly employees were threatening to weaken the entire program. Research was conducted to obtain answers to these questions: (1) What were the causes of turnover? (2) Why couldn't the company find employees? (3) What could management do to solve some of these problems?

Guaranteed complete confidence, employees were frank and factual in their answers. After analyzing and studying them, specific programs were adopted by management to: (1) Attract, retain, and motivate good employees; (2) maintain and improve caliber of employees to make possible promotion from within; (3) improve competitive position by providing greater quality of production and better and faster service at reduced costs. Details of complete program were also outlined.

240. WHY MANAGERS QUIT, Fast Food Magazine, October 1967,
8 pages.

In this study, personnel turnover was considered as a management problem rather than as a restaurant industry problem. To find out why they leave,

interviews were conducted with executives who had recently left jobs. All were highly rated by their current companies. Some held staff positions at the vice-presidential level, others were managers of high-volume restaurants of various types.

The men felt little sense of identity with company management. They felt their work and worth went unrecognized, their future undefined. In 90% of the cases, salary was not a motivating factor in leaving, although profit sharing, incentives, and other forms of compensation were mentioned as added factors in accepting new positions. Thirty quotations of 20- to 75-word length were included in the report.

241. WORK INSTRUCTION PROGRAMS FOR THE FOOD SERVICE INDUSTRY, 1967.

Departments of Institutional Management and Industrial Engineering,
Kansas State University, Manhattan, Kans.

There were two objectives to this study: (1) To develop efficient work methods for 100 typical tasks in the food service industry; (2) to create programmed learning media for communicating these methods to employees.

Training problems in the food service industry were found to be severe, especially for those with low levels of verbal and reading skills. It was discovered as the programs were developed that the "how" of a task could be communicated effectively but the "why" was not easy to demonstrate pictorally. The programs were put on 35 mm. slides. To communicate the why, a script was developed to be read by the trainee or the teacher. Ten programs were completed before the project was terminated.

242. YOUR RESPONSIBILITY FOR SAFETY, 1963, National Restaurant

Association, 1530 N. Lake Shore Dr., Chicago, Ill. 60610, 20¢.

Utilizing records and surveys of accidents, plus research into methods of preventing them, the objective of NRA and the Restaurant Division, Trades and Services Section, National Safety Council, was to prepare a manual on safe practices for food service establishments.

Records showed that 34% of accidents were the result of serving operations, 21% during food preparation, 16% in materials handling, 12% during cooking, and 17% in cleanup refuse disposal and all other activities. All of the specific safety rules and practices were designed to reduce accidents that result in time lost, the expense of replacing injured personnel, elimination of suffering due to injury, loss of goodwill and customers, and the many other costs for medical, hospital, legal, and court fees. The responsibilities for management were listed in terms of the safety equipment that should always be available.

Additional Reference Sources In This Report
Pertaining to Personnel Management

In addition to foregoing abstracts, additional information pertaining to the subject may be found in the following abstracts which are presented elsewhere in this report:

<u>Abstract No.</u>	<u>Publication Title</u>
8	An Earnings Report for Fifty Selected Restaurants
56	Convenience Systems
59	Food Merchandising (Panel)
121	Convenience Foods: A Program for Today and Tomorrow
131	Fire Safety for Restaurants and Eating Establishments
140	Ideas are Food for Thought In Food Service Planning
143	Kitchen Machines
144	Labor Utilization and Operating Practices In Commercial Cafeterias
158	The Army's Experience With Ready Foods
166	Trouble-Shooting Food and Beverage Operations
167	Turn a Safety Engineer Loose in Your Kitchen
170	Working with Convenience Foods to Build a Cost-Effective Food Service Program
176	A "Clinical Analysis" of Five Basic Problems of Restaurant Management
183	Can Dietary Improve The Food and Contract The Cost?
196	Insurance Review....For Restaurant Management
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APPENDIX

Exhibit A - Alphabetical Listing of Abstracts Contained in this Report

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Analysis of U.S. Army Food Preference Survey (1963)	50
An Analysis of the Factors Considered by Commercial Banks in Granting Capital Loans for a Proposed Restaurant	179
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A Study of Manufacturer/Wholesaler Relations in the Volume Feeding Market	85
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A Study of the Teaching Procedures Used in a Quantity Food Preparation Course	212
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Exhibit B - Sources of Additional Information

The following bibliographies and abstracts contain additional information relative to the food service industry.

A BIBLIOGRAPHY ESPECIALLY PREPARED FOR HOTEL AND RESTAURANT ADMINISTRATION AND RELATED SUBJECTS, School of Hotel Administration, Cornell University, Ithaca, N.Y. 14850. Published annually in August issue of The Cornell Hotel and Restaurant Quarterly for 17 years. Approximately 50 pages. Reprints \$1 each.

Annual bibliographies are prepared particularly for the School of Hotel Administration at Cornell University and are fashioned to meet the needs of its specialized library. The periodicals studied number approximately 150 and are those listed in the library files. Articles selected from these periodicals are chosen on the basis of their reference value. The annual acquisition of books, pamphlets, and reports is likewise selective.

All publications listed under approximately 500 subjects can be found in the school's library, where they must remain for reference use. Persons wishing to acquire publications listed in each issue of the Bibliography can address their requests directly to the periodicals and publishers, whose mailing addresses are included.

LITERATURE OF THE LODGING MARKET, AN ANNOTATED BIBLIOGRAPHY, Frank D. Borsenik, 1966, Bureau of Business and Economic Research, Graduate School of Business Administration, Michigan State University, East Lansing, Mich. 48823.

The objective of this study, sponsored by the American Hotel and Motel Association, was to review the literature that had been written about the demand for public lodging and the volume of travel in the continental United States during the period January 1946, to June 1965, and then to compile a bibliography. A summary of the development of the industry, based upon this literature, was included.

In the bibliography were listed 413 original research reports, articles, and books relating not only to the lodging industry but to the traveling public as well. The subjects covered were the characteristics of the traveling public; the lodging market, its trends and relative size, past and present; problem areas and their solutions, tried or proposed. Charts and tables were included, plus a summary of the development of the industry from 1946 through 1965.

HOME ECONOMICS RESEARCH IN INSTITUTION ADMINISTRATION, 1965-1966, American Home Economics Association, 1600 Twentieth Street, N.W., Washington, D. C. 20009. 25¢.

Directors of research in institution administration in colleges and universities and directors of dietetic internships approved by the American Dietetic Association were asked to report research and other special projects

started or completed since January 1, 1965. A total of 95 projects was reported by 25 institutions. Most of those completed were abstracted. The individual research and special problems were listed alphabetically by States, by institution, and by author. A code was used to indicate the type of research or problem and when started and completed.

HOME ECONOMICS RESEARCH ABSTRACTS - 1966--INSTITUTION ADMINISTRATION, 1967. American Home Economics Association, 1600 Twentieth Street, N.W., Washington, D.C. 20009. 50¢.

Included in this volume were home economics research abstracts of thesis and dissertations in institution administration completed during 1966, and an index of authors. A total of 34 abstracts from 9 colleges and universities were received and included. Some limited editing was done because of space limitations. To obtain more information about a particular research project, recommendation was made to write directly to the researcher, the director, or to the department where the research was conducted. Theses and dissertations that had not been published were made available on interlibrary loan. Abstracts for Institution Administration have been published since 1957.

TITLES OF THESES--HOME ECONOMICS AND RELATED FIELDS, 1962-1963, American Home Economics Association, 1600 Twentieth Street, N.W., Washington, D.C. 20009 \$1.

The objective of the AHEA in compiling this list of titles of graduate thesis completed in 1962-1963 was to aid research leaders, administrators, students, and others interested in the progress of home economics research. In previous years, this compilation was prepared by the Agricultural Research Service of the U.S. Department of Agriculture in cooperation with the Office of Education of the U.S. Department of Health, Education, and Welfare. With 63 institutions reporting, 571 titles were listed, and 25 of these were in the institution administration area. Each entry, listed the title of a master's or doctor's thesis, author, institution granting the degree, date thesis was approved, where filed, and number of pages.

Titles of Thesis--Home Economics and Related Fields, 1963-1964 (\$1)
listed 612 titles, with 23 in the institution administration area.

Titles of Thesis--Home Economics and Related Fields, 1964-1965 (\$1)
listed 661 titles, with 21 in the institution administration area.

JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION, Subject and Article Indexes issued June and December each year. \$1 per copy. The American Dietetics Association, 620 N. Michigan Ave., Chicago, Ill. 60611.

COLLEGE AND UNIVERSITY BUSINESS, Subject and Article Indexes issued June and December each year. \$1 per copy. College University Business, 1050 Merchandise Mart, Chicago, Ill. 60654.

HOSPITALS - HOSPITAL LITERATURE INDEX, published quarterly (per year \$10), and Five-Year Hospital Literature Index (\$20). American Hospital Association, 840 N. Lake Shore Drive, Chicago, Ill. 60611.

THE MODERN HOSPITAL - Subject and Article Indexes issued June and December of each year. \$1 per copy. The Modern Hospital, 1050 Merchandise Mart, Chicago, Ill. 60654.

BUSINESS AND TECHNICAL ADVISORY SERVICE Of The National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610. 20¢ each.

Leaflet Number:

1. Profitable Food Service Management Thru Job Analysis, Descriptions and Specifications.
2. Profitable Food Service Management Thru Employee and Management Meetings.
3. Profitable Food Service Management Thru Good Supervision.
4. Profitable Food Service Management Thru Reduction of Employee Turnover.
5. Profitable Food Service Management Thru Job Evaluation.
6. Profitable Food Service Management Thru Worker Motivation.

FOOD MANAGEMENT LEAFLETS, Available from Restaurant and Hotel Management Program, Department of Food Science and Technology, Chenoweth Laboratory, University of Massachusetts, Amherst, Mass. 01002.

Leaflet Number:

1. Bacterial Food Poisoning
2. Frozen Foods in Food Service Establishments
3. Receiving Food in Food Service Establishments
4. Using Storage in Food Service Establishments
5. Using Storage Controls to Simplify Determination of Daily Food Costs.
6. The Cyclical Menu
7. Employee Training in Food Service Establishments
8. Principles of Planning Kitchen Layout for Food Service Establishments.
9. Care and Handling of Prepared Frozen Foods in Food Service Establishments.

10. Purchasing Food for Food Service Establishments
11. Using Financial Statements in Food Service Establishments
12. Operating Budgets for Food Service Establishments
13. Using Break-Even Analysis in Food Service Establishments
14. Purchasing Canned Fruits and Vegetables for Food Service Establishments
15. Purchasing Dairy Products for Food Service Establishments
16. Purchasing Beef for Food Service Establishments

CATALOG OF BOOKS, BULLETINS, AND PAMPHLETS, The Educational Materials Center, National Restaurant Association, 1530 N. Lake Shore Drive, Chicago, Ill. 60610.

LIBRARY LIST, American Hotel and Motel Association, 221 W. 57th Street, New York, N.Y. 10019.

ENCYCLOPEDIA OF RESOURCES, Institutions Magazine,
January 1968, 24 pages. Encyclopedia, complete with
manufacturers' catalogs and names and addresses--\$10

Listed in this Encyclopedia Section were 35 categories of sources of
specialized information including:

Accountants	Government & Businessmen's Guide
Architects	Interior Design
Association of Operating Executives	Labor Force
Advertising	Libraries
Books	Management Seminars
Business Cycles	New Markets
Computer Service Bureaus	Personnel Agencies
Consultants, Food Service	Quantity Recipes
Consultants, Management	Recruitment
Credit Cards	Ready-To-Serve Foods
Food Promotion Organizations	Research & Development
Food Service Equipment	Research, Market
Food Service Equipment, Expenditures on	Service & Supply Organizations
Franchising	Schools
Frozen Food Warehouses	Training Aids & Systems
Furnishing Marts and Centers	Travel
Furnishings, Specialized Associations	Utilities
	World Calendar of Events

THE SOCIETY AND RESEARCH--WHAT CAN THE MEMBERS EXPECT? Arthur C. Avery, Technical Div., Food Science and Engineering Div., U.S. Naval Supply Research and Development Facility. Report presented at 8th Conference, May 1963, Society For Advancement of Food Service Research, 1530 N. Lake Shore Dr., Chicago, Ill. 60610, 12 pages. Xerox copy \$1.20.

This study explained why quantity food service had become one of the country's most backward and inefficient industries, and why research was not employed to reduce heat and food losses, to utilize space more efficiently and systematically, to increase work productivity, and to increase quality of foods served to patrons. Facts were drawn mainly from personal records and experience.

The problems were stated and what could be done about them was outlined under these six headings: (1) Need for research not known; (2) lack of concerted action in research; (3) definition of research needed; (4) future planning committee; (5) encouraging college researchers; (6) interpretation of research results.

CHANGING CONCEPTS IN THE MANAGEMENT OF RESEARCH, James Alcott, Director, Economic Development Division, Midwest Research Institute. Report presented at 10th Conference, April 1964, Society for Advancement of Food Service Research, 1530 N. Lake Shore Dr., Chicago, Ill., 23 pages. Xerox copy \$2.30.

Out of 18 years of managing research, this report summarizes why all segments of the economy failed to benefit more fully from the Nation's technological and scientific resources, plus why barriers to the effective use of technology were built up in four areas: within corporate management, within the scientific community itself, in institutional factors, and in limitations in the human mind.

A detailed challenge was presented regarding how to manage the transfer of useful information generated by scientists and engineers and to relate this to both public and private economic growth. This would be accomplished only by a mutually purposeful, continuous effort among research scientists, business leaders, the management of universities, and Government officials at all levels.

THE UNIVERSITY AND FOOD SERVICE RESEARCH, Doretta Hoffman, Ph.D., Dean, College of Home Economics, Kansas State University, and Mrs. Grace Shugart, Head, Dept. of Institutional Mangt. Report presented at 10th Conference, April 1964, Society for Advancement of Food Service Research, 1530 N. Lake Shore Dr., Chicago, Ill. 60610, 10 pages. Xerox copy \$1.

The findings in this report revealed that food service research was becoming increasingly important and necessary because of the changes and innovations within the industry, increases in technology, rising costs and extreme shortages of skilled personnel - while consumer needs and demands were becoming greater each year.

Faculty who answered questionnaires emphasized the following areas for university research: Equipment design and layout efficiency; improved design through motion and time studies, point-of-use storage, sanitation; computer

based management; consumer psychology as related to food habits, buying practices, attitudes toward food; materials handling; marketing; work performance standards; development of guide lines for management. Trends in developing skills and research methods, raising funds, and improving communications were also presented.

Exhibit C - Objective, Scope, and Methodology

The Food Research Center for Catholic Institutions, North Easton, Mass., was awarded contract number 12-14-100-9498 (52) by the Agricultural Research Service, U.S. Department of Agriculture, on June 30, 1967.

The contract was for: "Determination and appraisal of problems and research needs in the food service industry." The contractor was to: "Diligently plan and conduct an investigation of food service operations and recommend priority of research needs in the food service industry." The more specific responsibilities of the contractor were:

A. Conduct a review of literature published since 1955 and unpublished information on the subject of food service operation in the following general areas:

1. Management, including purchasing, cost controls, sources of capital, personnel selection, and training, and supplier-food service operator relations.
2. Kitchen operation including layout, equipment, and work methods.
3. Customer service and merchandising.
4. Economy of scale or efficient business size and site selection.
5. Central food preparation, commissary operations, transportation from commissary to food service operation.

B. Evaluate each document selected and reviewed under foregoing item A as follows:

1. Adequacy of coverage of the subject matter.
2. Research background and basis for conclusions in the document.
3. Summarize and organize the content of each document selected for review above and highlight significant findings thereof.

C. Determine the research needs in each of the five areas set forth under item A and develop recommendations for priority of the needed research in each area.

Initial interviews were conducted with publishers, operators of food service chains, and individual restaurant owners. These were directed to determining their assessments of research needs, problem areas, and their recommendations regarding sources of research reports. Concurrently, potential sources of

research reports on the subject of food service operation were assembled. Letters numbering 715 were mailed to representatives of organizations requesting research reports or information regarding them. Included in this first mailing were:

170 hospital, restaurant, and institutional educators representing all colleges and universities teaching hotel, restaurant and dietary administration.

Associations directly interested in the food service industry, including associations of operators, professional groups, and manufacturers.

Leading food service operators and food and equipment manufacturers.

Publishers, accounting firms, and food service consultants.

U.S. Government agencies.

As of three months later, replies had been received from 52 of these sources. Some of these replies contained pertinent research material; others offered further sources of research reports.

Following this, intensive followups were conducted to obtain reports from the most promising sources. These sources were contacted by mail, telephone and in-person visits. Based on the initial findings, plus a listing of research gaps of the food service industry, intensive interviews were conducted with 38 operators, association executives, educators, and consultants to determine the relative importance of the research needs and priorities listed in the Summary and detailed in the various sections of this report.

In all, the gross numbers of contacts made in the research literature review and evaluation were:

Telephone	86
Personal	72
Mailings	1,592 total--as follows:

40 Food Service Associations

60 Educational Associations and Colleges

240 Institutional Food Manufacturers

100 Food Equipment Manufacturers

100 Members of Council on Hotel, Restaurant, and
Institutional Education.

250 Multiunit operators

10 Food Service Magazines

645 Recontacts

147 Follow-up letters

Reports and publications received and evaluated..... 918

Reports evaluated and summarized..... 251

In abstracting the research reports, models were set up covering the following criteria: (1) What was the objective of the study? (2) What research methods were followed? (3) What were the principal findings?

Comments made jointly by two executives of a food service association proved most interesting when they stated: "After reviewing these research gaps, we realize that this is what our association has been reaching for all along. Now we can program the research of the restaurant industry and stop wasting time arguing among ourselves about whether this or that project should be undertaken first."

The dean of a university's hotel, restaurant, and institutional division remarked: "Out of this study is bound to emerge an inter-related framework for further analysis and research within the food service industry. From this we can formulate realistic research projects for our departments, ourselves, students, and various segments of the food service industry. When such direction and integration takes place, the effectiveness of the industry will advance realistically and more resultfully than it has in the past."

The executive vice president of a food service group said: "I was stimulated by this session. Mainly, I came to the realization that our most difficult challenge has been to decide on objectives for our operations and then to create definite plans and involve our people to help these results come true. Competition is becoming so tough that we can no longer operate on a day-to-day basis. Yet we cannot afford to get caught up in systems that bog us down with volumes and volumes of manuals and instructions. What we need most are guidelines that point the way to consistent and profitable operations in our special kind of business."

* NATIONAL AGRICULTURAL LIBRARY



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